

INTRODUCTION

Chapter 3 contains a description of the resources and socioeconomic conditions found in the planning area. Much of this information is summarized from the Management Situation Analysis document on file in the Lewistown District Office and the Havre and Great Falls Resource Area Offices.

The Emphasis Area section includes information on all resources significant to the particular emphasis area. This will enable the reader to gather a full description of resources pertaining to an emphasis area in one section.

CLIMATE

The planning area lies within portions of the Great Plains and the Northern Rocky Mountain physiographic provinces. The climate is dry continental with short summers and long winters. Average July temperatures range from 65-70 degrees Fahrenheit (°F.) and January temperatures vary from 11 to minus 15°F. The growing season lasts 116-151 days. Precipitation ranges from 10-14 inches, except over portions of the Bear's Paw Mountains where the average is 15-20 inches. May and June are usually the months of highest precipitation.

The prevailing wind direction in the area is from the southwest, (National Oceanic and Atmospheric Administration, 1981). Yearly wind speeds average 10 miles per hour (mph) with higher winds accompanying local thunderstorms and frontal weather systems. Wind speeds in excess of 50 mph occur frequently during the winter months. Winds associated with winter frontal weather systems are known locally as "Chinooks" and can raise temperatures dramatically (often as much as 50° F. in a few hours) melting and evaporating ice and snow. However, since the ground usually remains frozen, little of this moisture penetrates the soil.

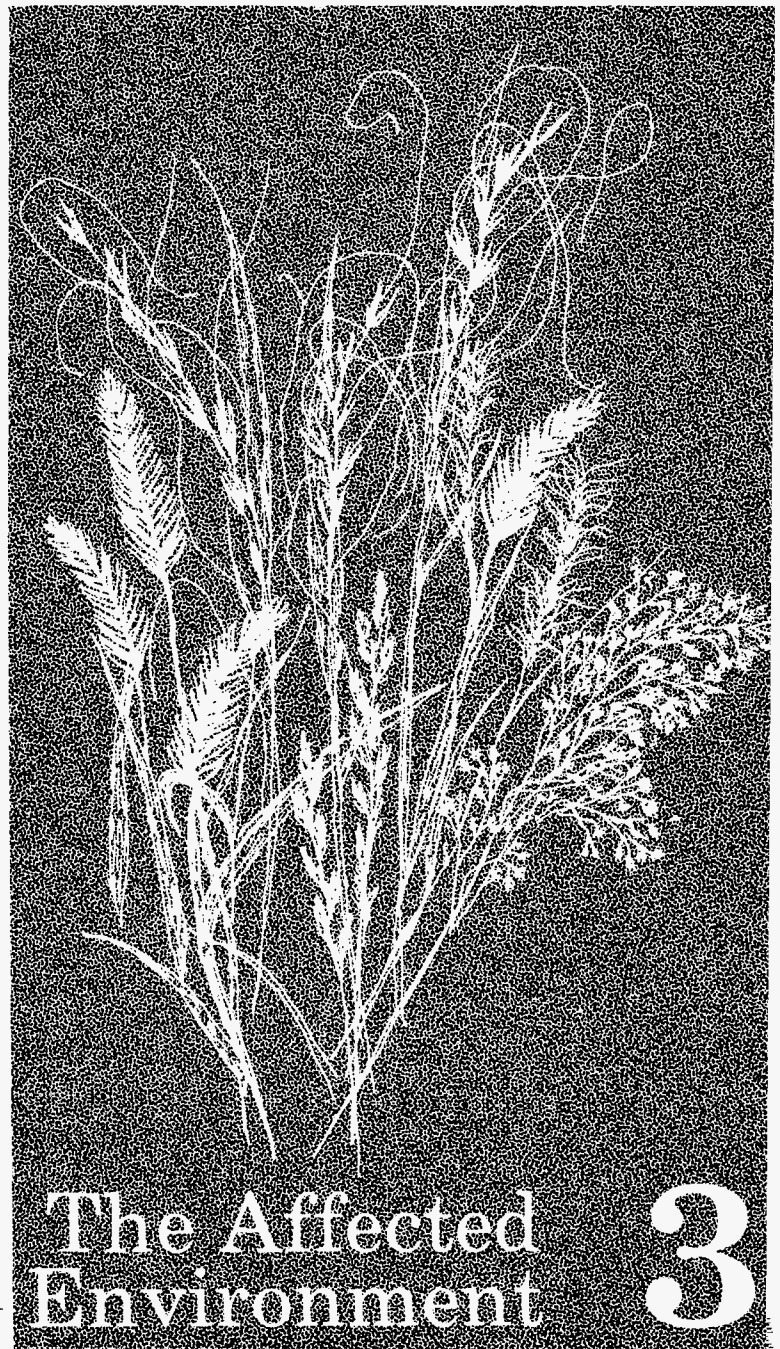
AIR

Air quality in the planning area is usually excellent and meets or exceeds Montana Class II standards. A Class II area is defined as any area cleaner than federal quality standards, which is designated for a moderate degree of protection from future air quality degradation. Moderate increases in new pollution may be permitted in a Class II area.

Localized and short-term sources of air pollution result from farm and ranch operations such as plowing, pesticide applications, burning, etc. However, these temporary air quality degradations are acceptable in a Class II area.

Hydrogen sulfide (H₂S), a poisonous gas with a characteristic rotten egg smell, is a by-product sometimes associated with oil and gas production. There are oil storage facilities in the planning area with approval to flare sour gas.

The amount of H₂S in a producing reservoir usually increases with time as a result of secondary and tertiary recovery methods which spread the H₂S generating microorganisms to all portions of the reservoir. If venting or flaring begins to approach levels of pollution in excess of the air quality standards, the approval to flare is rescinded. At this point the only alternative for proper disposal is through pipelines connecting the facility with H₂S recovery plants.



The Affected
Environment

3

SOIL

Specific soil information for the RMP area is available from the following four soil surveys.

The Blaine County Soil Survey covers the eastern portion of the Havre Resource Area (RA). The field work for this Order II survey was completed by the Soil Conservation Service (SCS) in 1976, and published in April, 1986. The survey was made for agricultural and rangeland management.

A Bureau of Land Management (BLM)—SCS reconnaissance soil survey of the public lands in Hill, Liberty and Toole Counties and Chouteau County north of the Missouri River was done in 1979, and the unpublished legend is on hand at BLM offices in Havre and Great Falls. This Order III survey was made primarily for rangeland management uses.

The Glacier County Soil Survey covers Glacier County. It was completed in 1968, and published in 1980. The survey was done by the Soil Conservation Service.

An Order II soil survey is underway in Chouteau County. It is approximately 50% completed, with a projected completion date of 1991. As this survey information becomes available for public lands, it will be used to update survey information. This survey is being made primarily for agricultural and rangeland management.

These soil surveys identified three distinct landforms with associated soils in the planning area. The soils of this planning area are derived mainly from sedimentary bedrock, glacial till and alluvium from mixed rock sources. The landscapes have complex and diverse soil patterns, varying greatly in characteristics, topography, and productivity.

For descriptive purposes the soils were grouped into 19 geomorphic soil subgroups (see Appendix 2.5). Each of these soil subgroups have unique capabilities and limitations for land uses and treatments based on climate, parent material, topography and soil properties. A more detailed description of these soil subgroups is given in the Draft Prairie Potholes Environmental Impact Statement (EIS).

Glaciated Prairie

The glaciated prairie landform is composed mostly of loamy and clayey soils on glacial till uplands. The most common soil subgroups in this landform are 1, 2, 7 and lesser amounts of 6, 8 and 17 (see Appendix 2.5.) Steep shale, siltstone, and sandstone bedrock exposures and gravel capped rims along the valley walls of deeply dissecting drainages are common in this landform. Upland potholes, valley bottoms, terraces, fans and valley footslopes are also significant inclusions, with complex soil patterns and physical properties.

These nearly level to rolling prairies have slight to moderate erosion hazards, due to the prominence of dense clubmoss-blue grama sod. When disturbed or cultivated, erosion hazards increase, especially the wind erosion hazard. The loamy and clayey alluvial soils in floodplains and drainages contain areas of wetland or riparian vegetation where water tables are at or near the soil surface. This glacial till parent material is naturally high in salts and contributes to saline seeps in drainages below reservoirs and on some slopes and upper drainages.

Sedimentary Breaks

The sedimentary breaks landform is composed mostly of clayey soils weathered from acid and calcareous shales. The most common soil subgroups in this landform are 3, 4, 5, 16 and lesser amounts of 6, 10, 11, 12, 13 and 17. Included in this landform area are loamy sedimentary uplands adjacent to stream valleys with complex soil patterns and physical properties. Floodplains, terraces, fans and footslopes with contrasting soils occur in these valleys. The floodplains are dominated by loamy and clayey soils with a forest canopy cover in local areas. Some areas have sandy soil textures next to stream banks. The sedimentary parent materials in this landform range from shale to sandstone. These soils are usually fragile and extremely erosive because of the dominance of steep slopes and extreme physical properties such as high clay content, shallow depth to parent material, slow permeability, rapid surface water runoff and sparse vegetative ground cover.

Active geologic erosion is obvious throughout the sedimentary landform. The shale ridges are dissected by numerous drainages and valley walls that rise abruptly above the narrow floodplains. The high erosion and sedimentation rates have a detrimental impact on the life span of reservoirs in the area.

These sedimentary breaks soils are highly susceptible to compaction and due to the fragile nature of the soils and topography, vehicle travel and access are severely limited during seasonally wet periods.

Mass movement, or slumping, is a naturally occurring process in these sedimentary breaks areas, but it can also be the result of surface disturbing activities (like cutting roads into hillsides dominated by clays over shale).

Foothills and Mountains

The foothills and mountain areas are composed primarily of loamy and clayey soils in local mountainous areas with forest and intermixed grassland cover. The most common soil subgroups in this landform are 15, 18, 19 and lesser amounts of 9. These shallow to deep soils are found on hard bedrock ridges and on some footslopes forming rolling to very steep terrain with areas of bare rock and talus. Many areas have rock fragments throughout the soil.

These areas generally receive more precipitation than the surrounding prairies and therefore have greater vegetative ground cover. Erosion hazards are slight to moderate and compaction susceptibility is moderate to high. Areas that are shallow to bedrock are difficult to rehabilitate after surface disturbing activities. The foothills and mountains in this landform are valuable watersheds for many streams in the RMP area.

WATER

Water studies covering the planning area include a 1983 United States Geological Survey (USGS) study and a BLM summary report completed in 1980, for the Prairie Potholes Environmental Impact Statement (EIS).

Surface Water

The primary sources of surface water resources in the planning area include 3 major rivers, (the Missouri, Marias and Milk Rivers), 3 smaller perennial streams, 18 intermittent streams, 773 reservoirs and 728 potholes. The primary uses of surface water include water for livestock, and wildlife consumption, providing waterfowl and fisheries habitat and maintaining instream flows.

Surface water in the area is generally a very hard, calcium-bicarbonate type. Sodium and sulfate concentrations are also high, possibly contributed by numerous saline seeps from shale and siltstone outcrops. Water quality is usually best during periods of high flow due to the dilution effect, but still cannot be used for human consumption without some type of treatment. During periods of low flow total dissolved solids (TSD), fecal coliform and bacteria, and turbidity increase in concentration.

Water quality is generally good for livestock and wildlife year-round.

Groundwater

Shallow groundwater (within 500 feet of the surface) is scarce or absent throughout most of the RMP area. Where present, shallow groundwater can be found in alluvial deposits along the larger streams and in buried pre-glacial alluvial channels. Yields range from 1 to 100 gallons per minute (gpm), but average 2-5 gpm. The quality of this water is suitable for livestock and wildlife but high TDS levels (1000-5000 parts per million) make it unsuitable for domestic use.

Other shallow aquifers such as the Judith River and Eagle sandstones occur in the RMP area, but their extent is so limited they cannot be considered major sources of groundwater.

Groundwater of better quality and quantity is available from deeper aquifers such as the Madison formation, but the costs associated with development make it prohibitive for use except for large commercial interests or municipalities.

Produced Water

Produced water is a by-product of oil-gas production, especially in the Kevin Rim area. Several oil-gas wells dispose of their produced water into pits for livestock consumption, at the request of area ranchers. This water is suitable for livestock and wildlife but high TDS levels make it unsuitable for domestic use. Water quality is monitored annually by the oil-gas companies. Produced water that is unsuitable or not needed for livestock is injected back into the formation from which it comes.

The use of produced water must be permitted by the state and none is allowed to flow uncontrolled into nearby surface drainages.

PALEONTOLOGICAL RESOURCES

Paleontological resources consist of fossil plants and animals derived from past life on earth. Early explorations (1870s—1880s) in the region yielded many new fossils, particularly dinosaurs. A BLM paleontological survey along a portion of the Missouri River was completed in 1984. This survey documented many vertebrate and invertebrate sites. Major geologic formations in the planning area contain fossils from the Cretaceous period (around 65-80 million years ago). The remains of dinosaur, crocodile, shark, turtle and various other fossils were found in the Judith River formation. Dinosaurs have also been found in the Two Medicine formation. Marine reptiles and a variety of invertebrate fossils are found in the Bear's Paw formation.

MINERAL RESOURCES

The planning area is underlain by sedimentary deposits including sandstones, shales, limestones and dolomites. These stratigraphic units have been folded, faulted and intruded (by igneous bodies) resulting in complex and diverse geologic conditions, ranging from glaciated flat lying sediments in north-central Montana to the massive overthrusts present along the Rocky Mountain Front.

Three uplifts, the Sweet Grass Arch, the Bear's Paw Mountain Arch, and the Sweet Grass Hills are prominent structural features. Portions of the Montana Disturbed Belt and the Rocky Mountain Overthrust Belt cross the western edge of the planning area. Evidence of glacial activity is prevalent as large amounts of glacial till and outwash were deposited in the region.

Leasables

The most common leasable minerals within the planning area include oil, gas and coal. The BLM issues leases for exploration and development of these resources.

Oil & Gas

Significant deposits of oil-gas lie within the planning area (see Figure 3.1). The northwest portion of the planning area holds the greatest amount and numbers of known reserves. Structural and stratigraphic traps within Cretaceous and Mississippian age formations contain most of the oil and gas deposits. Devonian age formations are known to contain some hydrocarbons but the ultimate potential is not yet known. Concentrations of reserves are found in the Kevin Sunburst Dome, the Bear's Paw Mountain Uplift, the Overthrust Belt, the Sweet Grass Arch and related structures.

Historic development and production of oil-gas in the planning area dates back to the early part of this century. Oil fields in Kevin-Sunburst and Cut Bank were discovered in 1922 and 1932, respectively. Both fields, as well as later discoveries, have since been developed.

Early gas fields include the Havre field discovered in 1914, and Whitlash field developed in 1927. The Havre field was abandoned in 1926, however the Whitlash field is still producing. A gas pipeline was completed from the Whitlash field to Great Falls in 1928. Most new gas activity is dependent on existing or proposed pipelines.

Oil and gas production figures are provided in the Social and Economic Conditions section at the end of this chapter. The number of leases and acres by county are indicated in Table 3.1.

TABLE 3.1
OIL AND GAS LEASE INFORMATION
BY COUNTY¹

County	No. of Leases	Acres Leased
Blaine	710	714,464
Hill	116	123,947
Chouteau	150	164,216
Liberty	185	75,404
Toole	351	126,119
Glacier	34	24,949
Fergus	3	880
Totals	1,549	1,229,979

¹Current to August 1985, Derived from the ALMRS data source, BLM.

Coal

The eastern portion of the planning area (generally east of a line from western Liberty County to Fort Benton) contains the only assumed recoverable coal deposits. These coal deposits are contained in the Upper Cretaceous Age Eagle, Judith River and Hell Creek formations and in the Tertiary age Fort Union formation.

An estimated 897,300 tons of coal has been mined from the Big Sandy and Milk River coal fields in Blaine County between 1890 and 1960. No coal production is occurring at this time.

Generally, the coal in the planning area is subbituminous with a British Thermal Unit (BTU) rating of 8,300–11,500 BTU per pound (lb). An exception to this is found on the West Butte of the Sweet Grass Hills. Records indicate that a 2 foot thick coal seam was mined from the McDermott mine on West Butte during the early 1900s. This coal is bituminous and contains 10,500–14,000 BTU/lb.

Overall, the coal in the planning area is similar in grade and BTU content to the coal mined from the Powder River Basin in southeastern Montana and northeastern Wyoming. The exception is that the coal beds in the planning area are thinner and less continuous in lateral extent. Currently, these localized deposits are passed over in favor of the more strippable coal deposits in the Powder River Basin. Shippable deposits in the planning area would be localized in relatively rare areas of thicker coal beds (>5') combined with thin overburden (<0'). Estimated coal reserves, by county, are identified in Table 3.2.

TABLE 3.2
ESTIMATED COAL RESERVES¹
(MILLION TONS)

	COUNTY		
	Chouteau	Hill	Blaine
Measured & Indicated	0.9 MM Tons (2.5'-5' seam) 0.6 MM Tons (5'-10' seam)	28.0	None
Inferred	None	49.0	62.0

¹ Combo, J.X., Coal Resources of Montana, Geol. Survey Circ. 53, 1949, p. 12.

Locatables

The planning area contains deposits of gold, copper, lead, zinc and silver. Igneous intrusions have been the predominate factor in the formation of locatable minerals which are found primarily in uplifts such as the Bear's Paw Mountains and Sweet Grass Hills.

In the Breaks region of Blaine County there are several igneous intrusions, about the size of a city block. These intrusions originated at extreme depth from within the earth and are called diatremes. The composition of these diatremes is similar to kimberlite which contains diamonds in South Africa and other diamond producing areas. Bulk sampling and analysis of the diatremes in the Breaks has not revealed any occurrence of diamond.

Saleables

The planning area contains deposits of sand and gravel that originated from fluvial and glacial sources. The BLM issues permits for the use of these materials. Most of the commercially developed gravel sources are privately owned. The primary users of federally-owned mineral material deposits are state and county governments.

There may be a potential for clay and bentonite in the shallow formations throughout Toole and Liberty Counties, but neither has been tested for suitability for brick making or expanded aggregate. There is currently no known activity for the exploration and development of clay or bentonite resources in the planning area.

VEGETATION

Vegetative species are dependent on specific climatic and soil requirements. The planning area supports a diverse number of plant species because of the wide range of soil types, geology, and climatic conditions.

The following descriptions of each vegetation type will describe common and less common plant species, landforms, forage production and major uses. The carrying capacity of each vegetation type is based on forage production and is measured in animal unit months (AUMs). An AUM is defined as the amount of forage necessary for the sustenance of one cow, with calf, or its equivalent, for one month.

Grass

The grass vegetation type consists mainly of short and mid-grasses. It is predominately associated with silty, claypan, and thin silty range sites. This vegetation type occurs mainly on rolling uplands of the glaciated plains.

Common plant species in this vegetative type include grasses and grass-like plants such as western and thick-spike wheatgrass, needleandthread, Junegrass, Sandberg bluegrass, inland saltgrass, blue grama and sedges; forbs such as American vetch, scarlet globemallow, fringed sagewort, cudweed sagewort, pussytoes and bastard toad-flax, plains clubmoss, and prickly pear; and shrubs including silver sagebrush and winterfat.

Less common plant species include green needlegrass and bluebunch wheatgrass, plains reedgrass, prairie sandreed, nuttall saltbush, rabbitbush and skunkbush sumac. The grass vegetation type provides between 72 and 285 lbs. of forage per acre and it requires 11.1 to 2.8 acres in this vegetation type to provide an AUM.

The major wildlife species utilizing this vegetation type include antelope, sharp-tailed grouse and waterfowl. Antelope use this area yearlong. Sharp-tailed grouse and waterfowl generally prefer the tall residual grass areas for cover and nesting.

Grass/Silver Sagebrush

The grass/silver sagebrush type is similar to the grass vegetation type with slight differences in species composition and range sites. This type commonly occurs on the silty, thin silty, and sandy range sites. These lighter soils tend to favor the growing requirements of silver sagebrush; resulting in its increased frequency and plant composition.

Like the grass vegetation type, the grass/silver sagebrush type occurs primarily on the rolling uplands of the glaciated plains. It also exists in drainage slopes and bottoms in association with the rose/snowberry vegetation type.

Species composition is generally the same as in the grass vegetation type except for an increased proportion of silver sagebrush and greasewood.

The grass/silver sagebrush vegetation type provides between 72 and 320 lbs of forage per acre. It requires 11.1 to 2.5 acres in this vegetation type to provide one AUM.

Important wildlife species utilizing this vegetation type include antelope, mule deer, sharp-tailed grouse, sage grouse and waterfowl. Antelope and mule deer use these areas primarily in the fall and winter, utilizing silver sagebrush as a major food source. Sage grouse utilize these areas year-round for feeding, nesting and broodrearing.

Rose/Snowberry

The rose/snowberry vegetation type is primarily associated with slopes dropping into small drainages and drainage bottoms. It is common to the thin silty and overflow range sites. The grass/silver sagebrush vegetation type overlaps into this type on the thin silty range sites occurring on sideslopes of drainages. This type will also occur as understory in the cottonwood/willow type.

This vegetation type is primarily dominated by deciduous shrubs such as rose and snowberry. Buffaloberry, western wheatgrass, slender wheatgrass, alkali bluegrass, American vetch, perennial sunflower, two grooved milkvetch, western yarrow, lomatium, fringed sagewort, dotted gayfeather, scurfpea, hairy goldenaster and white milkweed are also common.

Other species that occur are buffaloberry, serviceberry, skunkbush sumac, silver sagebrush, green needlegrass, and needleandthread. Basin wildrye and Canada wildrye exist in small communities.

The rose/snowberry vegetation type provides between 72 and 471 lbs. of forage per acre. It requires 11.1 to 1.7 acres in this vegetation type to provide one AUM.

This vegetation type is important to mule deer and sharp-tailed grouse for food and cover. Sharp-tailed grouse will also utilize these areas for broodrearing.

Cottonwood/Willow

This vegetation type exists mainly on overflow, subirrigated or wet meadow range sites that are wet for long periods of time or the water table is high. The understory on most of these sites is of the rose/snowberry type.

Common species are the same as the rose/snowberry type with an increased proportion of willow and cottonwood. Box elder trees also occur in this vegetation type.

The cottonwood/willow vegetation type provides between 119 and 2,000 lbs of forage per acre. It requires 6.7 to 0.4 acres to provide one AUM.

This vegetation type is utilized by mule deer, white-tailed deer, sharp-tailed grouse, ring-necked pheasants and high populations of non-game birds. It is the primary habitat on public land for white-tailed deer and pheasant due to the dense understory often found in these areas.

Wetlands

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes; (1) at least periodically, the land supports predominately hydrophytes; (2) the substrate is predominately undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at sometime during the growing season of each year (BLM Wetland Policy, 1986).

Riparian areas are those areas within wetlands, geographically delineated by distinctive resource values and characteristics that are comprised of aquatic and riparian ecosystems. Riparian areas may be associated with lakes, reservoirs, estuaries, potholes, springs, bogs, wet meadows, and ephemeral, intermittent, or perennial streams.

Species common to this type vary widely from site to site. Table 3.3 is a list of species which occur in riparian areas. Riparian areas within the planning area are found along rivers and streams such as the Missouri, Marias and Milk Rivers, tributaries and other locally wet areas. There are approximately, 14,000 acres of riparian vegetation within the planning area.

TABLE 3.3
PLANT SPECIES FOUND IN RIPARIAN AREAS¹

Grasses	Forbs	Shrubs
Alkali sacaton American sloughgrass Canada wildrye Cheatgrass Foxtail barley Intermediate wheatgrass Japanese brome June grass Kentucky bluegrass Needleandthread Prairie cordgrass Quack grass Reed canary grass Six Weeks fescue Slender wheatgrass Smooth brome Tall wheatgrass Tufted hairgrass Western wheatgrass Green needlegrass Canada wildrye Basin wildrye	American licorice Bull thistle Canada thistle Cinquefoil Cocklebur Curley cup gum Dandelion Death camas Farnweed Golden pea Horsetail Lambsquarter Leafy spurge Milkweed Mustard Pepperweed Prickly pear Russian knapweed Smartweed Spotted knapweed Yarrow Yellow sweetclover	Big sagebrush Buffaloberry Chokecherry Diamond willow Gooseberry Greasewood June berry Rabbitbrush Red Dogwood Rose Russian olive Silver sagebrush Skunkbrush Snowberry Sticky current Slender willow White willow
Grass-like Beaked sedge Nebraska sedge		Trees Black cottonwood Box Elder Green Ash Lanceleaf cottonwood Narrow leaf cottonwood Peachleaf willow Plains cottonwood Quaking aspen Hawthorne

¹BLM, 1987

This vegetation type provides between 119 and 2,000 lbs. of forage per acre. It requires 6.7 to 0.4 acres to provide one AUM.

This vegetation type is utilized by mule deer, white-tailed deer, elk, and ring-necked pheasants. This is the primary habitat on public land for white-tailed deer, morning doves, and pheasant due to its dense understory. Many non-game birds are present in this type. In fact, a wider diversity of non-game species occurs within this vegetation type than in any other.

Big Sagebrush/Grass

This vegetation type is found mostly on upland benches and ridge tops within the Missouri and Marias River Breaks. It's found often on clayey, shallow clay, dense clay and coarse clay range sites and to a lesser extent, on silty range sites.

Western and thickspike wheatgrass, prairie Junegrass, Sandberg bluegrass and needleandthread are the most widely spread grasses throughout this vegetation type.

Common forbs include broom snakeweed, American milk-vetch, wild onion, Astragalus species, fringed sagewort, bastard toadflax, scarlet globemallow, lomatium and scurfpeas. The most prevalent shrub is big sagebrush.

Plains muhly and plains reedgrass are also present, but not to the same extent. On the poorer condition silty range sites, blue grama grass is present. On the better condition rangeland, green needlegrass and bluebunch wheatgrass can be found. On the lighter sandy soil and coarse clay, little bluestem and prairie sandreed are usually present. Other perennial forbs scattered throughout this vegetation type include buckwheat, cutleaf goldweed, prairie clover, pussytoes and white milkwort. Annual forbs will flourish on normal to wet years. On the sandy range sites, yucca is prevalent with American licorice and green sagewort. Rabbitbrush is also present, but in scattered communities. Other shrubs which occur in this vegetation type are Nuttall saltbush, creeping juniper, and winterfat. Scattered ponderosa pine is also present especially along the edge of ridges.

The big sagebrush/grass vegetation type provides between 72 and 320 lbs of forage per acre. It requires 11.1 to 2.5 acres to provide one AUM.

Important wildlife species occurring in this vegetation type include antelope, mule deer and sage grouse. Antelope utilize these areas yearlong and are dependent on sagebrush for winter browse. Mule deer utilize edges of sagebrush ridges adjacent to conifer forests for food year-round. They also utilize sagebrush heavily during the winter. Sage grouse are dependent on sagebrush year-round.

Wooded Breaks

Ponderosa Pine/Juniper

This vegetation subtype exists on the sideslopes of drainages within the Missouri River Breaks and is associated with the shallow clay and coarse clay range sites. It can overlap with the big sagebrush/grass type on the edges of ridges and benches.

Ponderosa pine and juniper are prominent but can be scattered, leaving open parks. The understory is rather scant in the ponderosa pine and juniper stands. The big sagebrush/grass vegetation type is the primary understory in the open timbered areas and open parks (refer to big sagebrush/grass vegetation for species composition).

The Ponderosa pine/juniper vegetation sub type provides forage production similar to the big sagebrush/grass vegetation type; 72-320 lbs/acre and 11.1 to 2.5 acres/AUM.

Mule deer and sharp-tailed grouse utilize this vegetation type for food and cover.

Ponderosa pine and juniper provide material for fuelwood, posts and poles. Ponderosa pine provides a limited opportunity for lumber.

Douglas-Fir/Ponderosa Pine

The Douglas-fir/ponderosa pine subtype is found in the foothills and higher terrain of the Bear's Paw Mountains. This vegetation type occurs primarily on the north and east facing slopes in the Missouri River Breaks. The timber stands are not generally heavy with understory. This vegetation type is most common on shallow clay and coarse clay range sites.

Other than the presence of Douglas-fir, the vegetation composition is the same as the ponderosa pine/juniper type.

Where the timber is dense, the available forage will be negligible but will increase in the less dense timber. The open timber and open parks have the same production as the big sagebrush/grass vegetation type; 72-320 lbs/acre and 11.1 to 2.5 acres/AUM.

These areas provide excellent cover for mule deer however, due to their scant understory, few food plants are available. Douglas-fir and Ponderosa pine provide material for fuelwood, posts and poles and a limited opportunity for lumber. Douglas-fir also provides a source of Christmas trees.

Non-Wooded Breaks

This vegetation type occurs on the lower slopes below the wooded breaks, primarily on shallow clay, thin clayey, shale, overflow and saline lowland range sites. The thin clayey and shale range sites are on the lower side slopes and the overflow and saline lowland range sites are on the drainage bottoms. Vegetation on the shallow clay and thin clayey and shale range site can be fairly scant. The shale range site will be lightly vegetated to completely barren. The steep slopes (>20%) limit livestock use on this vegetation type except on the large drainage bottoms.

Within this vegetation type, a separation between the slopes and drainage bottoms can be made, although there is considerable overlap. Big sagebrush is present on both the slopes and in the drainage bottoms while greasewood is mainly present in the drainage bottoms. Other woody species include Nuttall saltbush, shadscale, winterfat and rabbitbrush. Cottonwood trees exist in the wetter overflow range sites in the drainage bottoms.

Common grass species include western and thickspike wheatgrass, bluebunch wheatgrass, green needlegrass, prairie Junegrass, needleandthread, and Sandberg bluegrass while common forbs include American vetch, bluebell, cudweed sagewort, fringed sagewort, western yarrow, horsemint, thermopsis and yellow sweetclover.

Other grasses such as plains muhly, bottlebrush squirreltail and sedge species occur in the drainage bottoms. Blue grama and inland saltgrass are present on the poorer condition areas on alluvial fans. Prairie cordgrass and basin wildrye can be found along the drainage.

The non-wooded breaks vegetation type provides between 20 to 470 lbs. of forage per acre. It requires from over 40 to 1.7 acres in this type to provide one AUM.

These areas provide food and limited cover for mule deer. Deer utilize sagebrush and rabbitbrush as food sources and the rough, broken topography offers some cover.

Grass/Ponderosa Pine

This vegetation type occurs only on small scattered tracts of public land in the foothills of the Bear's Paw Mountains. Most of these tracts are open grass parks with scattered ponderosa pine timber. Shallow and silty range sites dominate this vegetation type. About 10 to 75% of the composition by weight is grass or grass-like species.

Rough fescue, Idaho fescue, bluebunch wheatgrass, balsamroot, lupine, western yarrow, fringed sagewort, American vetch, Astragalus, wild onion and phlox are the predominate species in this vegetation type. Other species present throughout this vegetation type are needleandthread, western wheatgrass, mountain brome, sedges thermopsis, milkvetch, penstemon, pussytoes, sticky geranium, stickseed, larkspur, Douglas-fir, snowberry, rose, bitterbrush and big sagebrush.

This vegetation type provides between 119 and 471 lbs of forage per acre and it requires 6.7 to 1.7 acres to provide one AUM.

This vegetation type is high value mule deer and sharp-tailed grouse habitat. Mule deer utilize browse and forbs as a good source and use timbered areas for escape and thermal cover. White-tailed deer can be found in aspen groves within this vegetation type.

Ponderosa pine provides material for fuelwood, posts and poles and limited opportunities for lumber.

Vegetation types, range sites and habitat types have been cross-referenced in Table 3.4 to assist the reader in better understanding resource program terminology.

TABLE 3.4
VEGETATION CROSS-REFERENCES¹

Vegetation Types	Range Sites	Habitat Types
Grass	Silty Claypan Thin Silty	Grassland
Grass/Silver Sagebrush	Silty Claypan Thin Silty Sandy	Grassland Shrub
Rose/Snowberry	Thin Silty Sandy Overflow	Woodland
Big Sagebrush/Grass	Thin Silty Sandy Clayey	Grassland Shrub
Cottonwood/Willow	Sandy Overflow Subirrigated Wet Meadow	Riparian
Wetlands	Sandy Overflow Subirrigated Wet Meadow	Riparian
Ponderosa Pine/Juniper	Clayey Shallow Clay Dense Clay Coarse Clay	Woodland
Douglas-Fir/Ponderosa Pine	Clayey Shallow Clay Dense Clay Coarse Clay	Woodland
Non-Wooded Breaks	Thin Clayey Shallow Clay Shale Overflow Saline lowland	Grassland Shrub

¹BLM, 1987

Noxious Plants

Table 3.5 identifies the noxious plant species present and the approximate size of infested areas in the planning area.

Noxious plant infestations are concentrated along the Teton, Marias, Missouri, and Milk Rivers as well as the Milk River tributaries.

TABLE 3.5
NOXIOUS PLANTS FOUND IN
THE PLANNING AREA¹

Noxious Plants	Acreage
Canadian Thistle	3,013 acres
Leafy Spurge	3,383 acres
Russian Knapweed	1,328 acres
Spotted Knapweed	921 acres
Whitetop	680 acres

¹BLM, 1987

Threatened and Endangered Plant Species

No plants, listed as endangered or threatened under the Endangered Species Act are known to occur within the planning area. However, potential habitat exists for *Antennaria aromatica* and *Rorippa calycina* which are both potential candidates for listing as threatened or endangered species. The potential habitat also exists for these Montana species of special concern: *Carex crawei*, *Carex sychnocephala*, *Hedysarum alpinum*, *Muhlenbergia andina*, *Plagiobothrys leptocladus*, *Psilocarphus brevissimus* var. *brevissimus*, *Ranunculus cardiophyllus* and *Triglochin concinnum* var. *debile*.

Forest Products

Approximately, 62,700 acres of forest exist in the planning area, including 16,800 acres classified as productive forest land.

Ponderosa pine is the predominant tree species with Douglas-fir, lodgepole pine and Rocky Mountain juniper also present. Cottonwood and willow grow along the Missouri, Marias and Milk Rivers. Ponderosa pine is found at lower elevations in the Missouri Breaks and Bear's Paw Mountains. Lodgepole pine is found at higher elevations in the Sweet Grass Hills and Bear's Paw Mountains. Douglas-fir is found on north facing slopes in the Missouri Breaks, Sweet Grass Hills, and Bear's Paw Mountains.

There is currently no commercial demand for forest products within the planning area. The use of forest products has been limited to personal use on a dispersed basis. The use of forest products during the last 10 years has averaged 68 cords of fuelwood and 19 Christmas trees per year.

Fire

Most wildfires in the RMP area occur in Blaine County and north Hill County. There have been two fires in the rest of the RMP area in the last 20 years. One occurred in the Sweet Grass Hills and the other on the Rocky Mountain Front.

An average of seven fires per year occur on public domain, within the RMP area. An average of two fires occur per year in the sagebrush-grass community and burn an average of 79 acres each year. An average of five fires per year occur in the wooded breaks vegetation type and burn an average of 200 acres.

Fires in the sagebrush-grass vegetation types tend to occur early in the summer and burn at low intensities. Fires in the wooded breaks vegetation type occur from mid to late summer and burn at high intensity levels and create the most resource damage.

Fire suppression and presuppression activities have kept fires to very small acreages, on the average, reducing the risk of large resource damaging fires.

Prescribed fire activity is not being utilized in the RMP area. Prescribed fire is a natural vegetation manipulation tool. It could best be utilized in the sagebrush grass and wooded breaks type with heavy climax vegetation understory (juniper) during periods when fires with low intensity levels could be utilized. The periods from April 1st to June 15th and September 15th to November 1st are considered low intensity burn levels that would not damage the resource. These burns are generally conducive to increased forage production in both communities.

RANGE

There are 390 grazing allotments in the planning area, of which 211 allotments are administered under Section 3 of the Taylor Grazing Act and 179 under Section 15 of the Act. Section 3 lands are those within a recognized BLM grazing district while section 15 lands are located outside of grazing districts. The Great Falls RA directly administers 64 Section 15 allotments while Havre RA administers the remainder.

One hundred and sixty-five ranch operators are authorized to graze Section 3 public lands with 144 operators authorized under Section 15. The Great Falls RA administers 56 Section 15 grazing leases and the Havre RA administers the remainder of the Section 15 grazing leases and all of the Section 3 grazing leases. Most of the grazing permits and leases are for cow/calf operators, although a few operations are for yearling herds and sheep herds.

Management categories have been assigned to each of the 390 grazing allotments. The three categories are maintain (M), improve (I) or custodial (C). Maintenance category allotments are defined as allotments whose range condition is satisfactory (good or better) and no resource conflicts exist. Custodial means that no intensive management practices will be attempted in the allotment. Improvement category allotments are those that have ecological range conditions of fair or less and may have resource conflicts that warrant intensive livestock management planning and range improvement investments. Management categories are listed for each allotment in Appendix 2.3.

Updating Allotment Management Plan (AMP) development is prioritized by management category and ranch operator interest. The development and updating of AMPs is first priority on I category allotments. However, development and updating are done on M and C category allotments, when operator interest is such that improvement in resource management is possible. The development and updating of AMPs is accomplished in a multiple use manner. That is, the AMP is developed and updated with an interdisciplinary approach. Objectives are prepared and a grazing system is developed to meet all resource needs within the allotment and on surrounding allotments.

Range improvements are planned as part of the AMP process. They too are planned to meet multiple use objectives set in the AMP. Water development is an important range improvement which improves distribution of livestock and provides waterfowl, fisheries and wildlife habitat.

Proposed water developments include pit reservoirs, retention reservoirs, wells, spring developments, raintraps, moats, pipelines and siphon systems. Where possible, new retention reservoirs are planned with pipelines to stock-tanks and exclosure fences. Siphon systems are being evaluated on existing reservoirs where waterfowl and/or fisheries are important. These systems exclose the reservoir from livestock grazing. The purpose of exclosing reservoirs from livestock grazing is to preserve shoreline vegetation and vegetation in tail waters. This will improve waterfowl and fisheries habitat as well as provide silt filtration to improve water quality and prolong the reservoirs useful life.

Other planned range improvements include division fences to allow rotation grazing; shading facilities to keep cattle from shading up in drainage bottoms/riparian areas; fences to form riparian pastures for improved riparian management; vegetation manipulation projects such as chiseling or scalping to improve forage production on clubmoss/blue grama rangelands; and crested wheatgrass seeding projects to provide spring deferment on native vegetation.

WILDLIFE & FISHERIES

The responsibility for wildlife management on public lands in the study area is divided among the Montana Department of Fish, Wildlife and Parks (MDFWP), which manages the animals, the U.S. Fish and Wildlife Service (USFWS), which is responsible for threatened and endangered species, and the BLM, which manages the wildlife habitat in the planning area.

A variety of habitat types support an equally large variety of wildlife species. Riparian and woodland habitats support the greatest variety and quantity of species because of diverse layers of trees, shrubs, and herbs.

Threatened and Endangered Wildlife Species

The planning area hosts a number of threatened and endangered species. An endangered species is one that faces extinction throughout all, or a significant portion of its range. Threatened species are those likely to become endangered in the foreseeable future.

The bald eagle is the only endangered species which routinely uses public lands within the planning area. No known active nest sites exist in the RMP area however, historical nest sites exist along the lower Marias and Missouri Rivers and these areas have the potential for future nesting sites. The Missouri, Milk and Marias Rivers are commonly used during migrations in March, April and November.

Peregrine falcons have been sighted during the spring and fall, probably while migrating. An historical peregrine nest site is located on the Kevin Rim, but has not been used recently. The south facing cliff of West Butte, in the Sweet Grass Hills is the primary peregrine nesting site within the planning area. This site, together with the east side of the Rocky Mountain Front and Kevin Rim, is considered a priority reintroduction site in the state by the USFWS Peregrine Falcon Recovery Team.

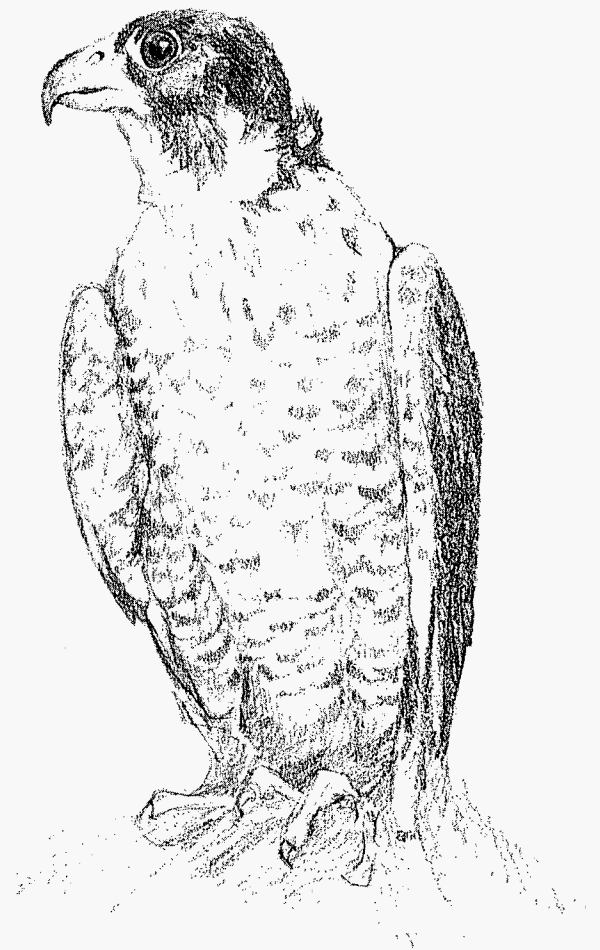
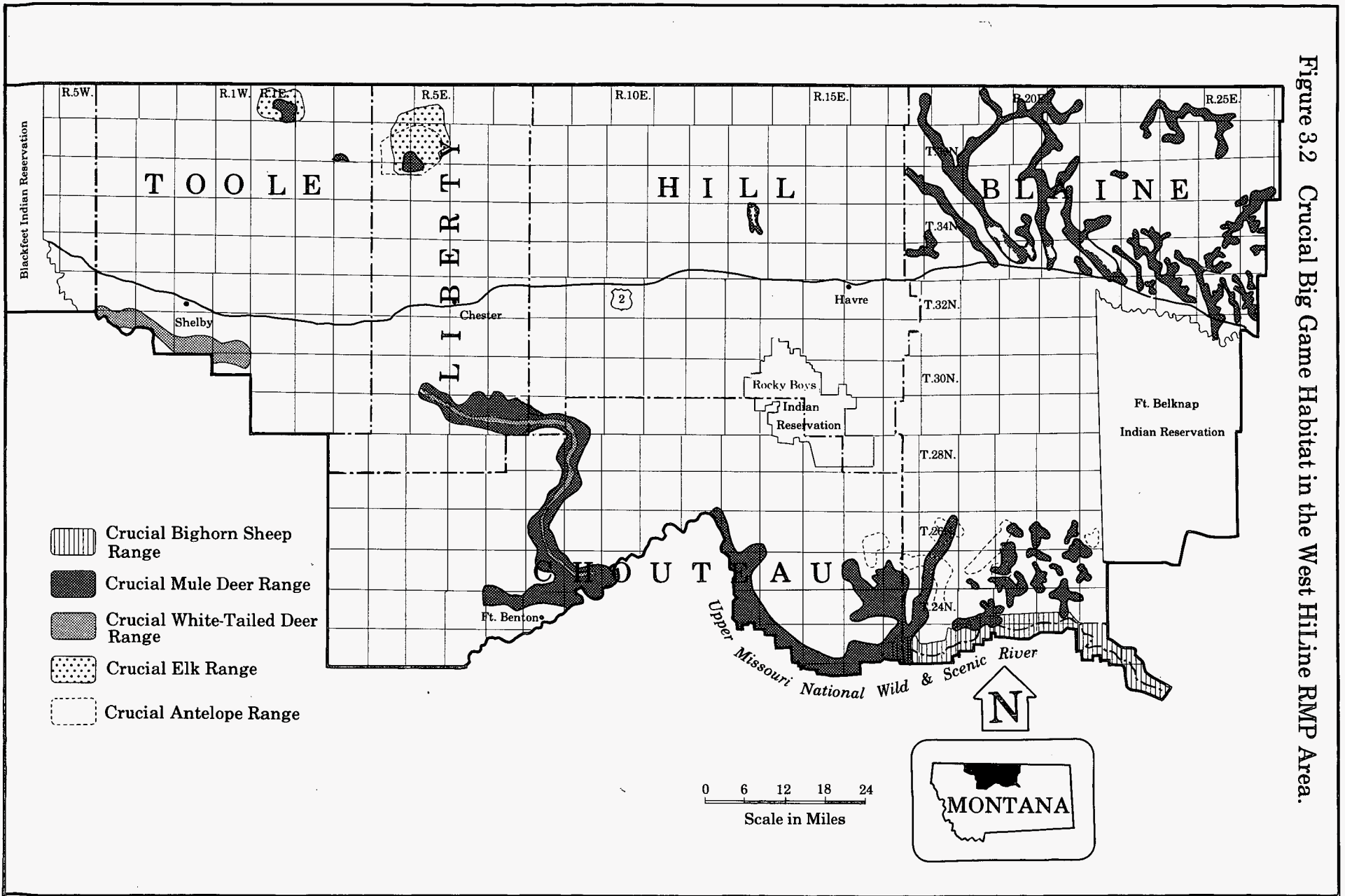


Figure 3.2 Crucial Big Game Habitat in the West HiLine RMP Area.



No critical habitat for the gray wolf or grizzly bear exists in the planning area though an occasional wolf is sighted.

The grizzly bear, also an endangered species, is found in Glacier National Park and the Blackfeet Indian Reservation; areas not administered by BLM.

No black-footed ferrets have been sighted in the planning area. The BLM does manage one black-tailed prairie dog town over 200 acres in size which could provide habitat for the ferret. Other small towns occur throughout the planning area but they are not suitable ferret habitat. These towns will be managed for the other sensitive species associated with prairie dog towns.

The piping plover was recently added to the threatened list. It commonly occurs on the bare shorelines of large water bodies or rivers. Although none have been observed, potential habitat is present within the RMP area.

Big Game

A variety of big game species use public land habitat in the planning area. Crucial big game habitats are shown on Figure 3.2.

Deer

Deer are the most numerous big game animals in the planning area, with mule deer easily outnumbering white-tailed deer on public land.

Mule deer inhabit drainage bottoms, broken side slopes, wooded breaks and mountain foothills, while white-tailed deer use drainage bottoms with riparian and brushy vegetation and areas adjacent to private cropland. Public lands provide about 254,000 acres of crucial and high value habitat for mule deer and about 8,000 acres of crucial and high value whitetail habitat. Deer populations vary depending on the severity of winters, quantity and quality of forage and other factors. Currently mule deer populations appear to be declining, while white-tailed deer are expanding their range. A MDFWP study indicates a density of 3-22 deer per square mile, with an average density of 6.75 deer. The only area supporting more than seven deer per square mile is the Sweet Grass Hills.

Grasses are used for food during the spring, followed by extensive use of forbs with some browse during the summer. Heavy use of big sagebrush, silver sagebrush, rubber rabbitbrush, skunkbrush sumac, western snowberry and rose occurs during the fall, winter and early spring. Sagebrush may be the only available food source during periods of deep snow.

Deer in the area are essentially non-migrating, but do concentrate on south facing slopes which are more snow free and warmer during winter months. Escape and thermal cover is also important.

Antelope

Pronghorn antelope habitat and populations are abundant throughout the planning area. Public lands provide approximately 137,000 acres of crucial and high value pronghorn habitat. Current survey data from the MDFWP indicates that populations are increasing. A survey by this same agency, indicates a density of 2-4.5 antelope per square mile. Resident and Canadian herds migrate to

areas along the Milk River during severe winters. The Canadian herds usually migrate back to their summer ranges in the spring.

Forbs comprise the major food source for antelope, except during the winter when sagebrush, and to a lesser degree, creeping juniper become critical food sources. Periodic severe winters substantially reduce antelope herds by starvation.

Elk

Approximately 150 elk inhabit about 7,200 acres of public land in the Sweet Grass Hills. Of this area about 4,000 acres are identified as crucial habitat. No food habit studies have been conducted of elk in the Sweet Grass Hills however, food preference studies in similar habitats indicate a preference for grasses, except during the spring when forbs are preferred. Aerial surveys indicate major winter and spring use in open grass parks on south facing slopes. Elk also inhabit the Cow Creek area and portions of the Missouri River Corridor. While population estimates are not available, the estimated elk capacity on the north side of the Missouri River Corridor and in the Cow Creek area is 600-800 head. The estimated capacity on the south side of the Missouri River Corridor is 120 head. These are MDFWP estimates, based on the amount of primary habitat available. However, based on past elk expansion rates, it is not likely the elk populations will reach these levels within the life of this plan (15 years).

Past elk expansion in these areas has shown no predictable pattern other than a preference for areas with little use by cattle.



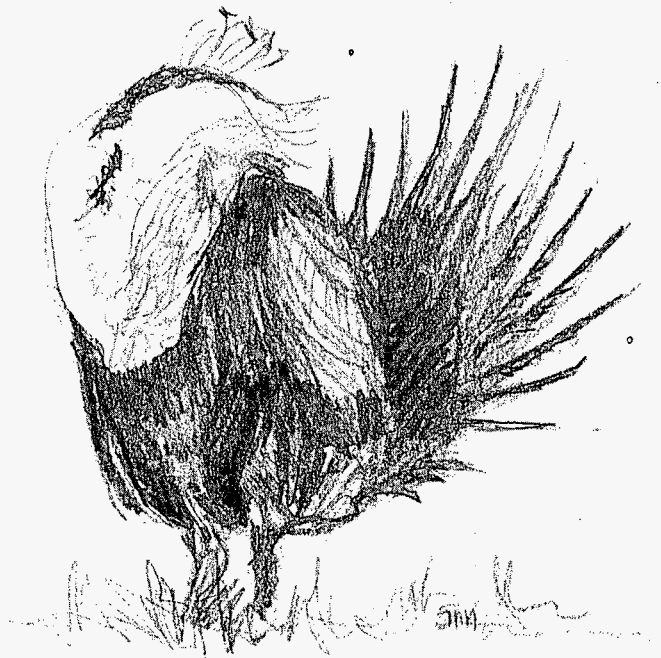
Bighorn Sheep

About 90 bighorn sheep reside in the planning area. The population on the north side of the river resulted from the partial migration of a 1980 sheep transplant on the south side of the Missouri River. The population appears to be healthy and expanding on both sides of the river.

Upland Game Birds

Upland game birds are quite numerous in the planning area and occupy most suitable habitats (see Figure 3.3). Sage grouse are primarily associated with sagebrush communities and occupy about 86,000 acres of public land. Sharp-tailed grouse occupy about 102,000 acres of habitat on public land. Sharp-tailed grouse occupy a diverse variety of habitats and are the most hunted upland game bird. Fourteen leks, or mating grounds, have been identified for each species on public land in the eastern portion of the planning area.

Pheasant and to a lesser extent gray partridge, are associated with private agricultural lands, but do utilize adjacent public lands with adequate cover.



Migratory Game Birds

Canada, snow and white fronted geese, whistling swans and 20 species of ducks occur in the planning area. Of particular importance, is the potholes region located in the northern portion of the planning area, which provides important goose and duck breeding habitat. Reservoirs become increasingly important during dry years when potholes do not maintain adequate amounts of water. The larger rivers such as the Missouri, Milk and Marias also provide suitable habitat. Cover on upland areas adjacent to bodies of water and on islands is necessary for nesting. Approximately 65 artificial islands have been constructed on reservoirs within the planning area and exclosures have been built around some reservoirs in an effort to protect shoreline cover and nesting habitat. Canada geese occupancy rates on these islands average 60-70%.

Mourning doves are abundant within the UMNWSR Corridor, occurring primarily in riparian and agricultural areas. Although little or no hunting occurs for doves, huntable populations are present.

Fisheries

Fisheries within the planning area consist of the Missouri, Milk and Marias Rivers; approximately 100 miles of BLM administered stream bank along tributaries to these rivers; and 14 BLM livestock reservoirs.

The Marias River, Cut Bank Creek, Upper Cow Creek and most reservoirs are cold water fisheries. The Marias River supports rainbow and brown trout and mountain whitefish while the two creeks support populations of brook trout. Rainbow trout reside in cold water reservoirs. Warm water fisheries in the planning area support large mouth bass, crappie, northern pike, sauger, walleye, channel catfish, burbot, paddlefish and sturgeon. The Missouri River supports one of the last known stable populations of paddlefish.

Non-Game

Numerous non-game species occur throughout the West HiLine RMP area. The planning area provides habitat for over 300 non-game species. Several species have been identified by the MDFWP to be of "Special Interest or Concern" (Flath, 1984). These are species whose numbers and/or habitat are limited or may be in future years if not properly managed. These species receive special management consideration in all phases of land use planning for maintenance or enhancement of their respective habitat. A complete list of wildlife species, including state sensitive species, can be found in the Management Situation Analysis documents in the Lewistown District Office.

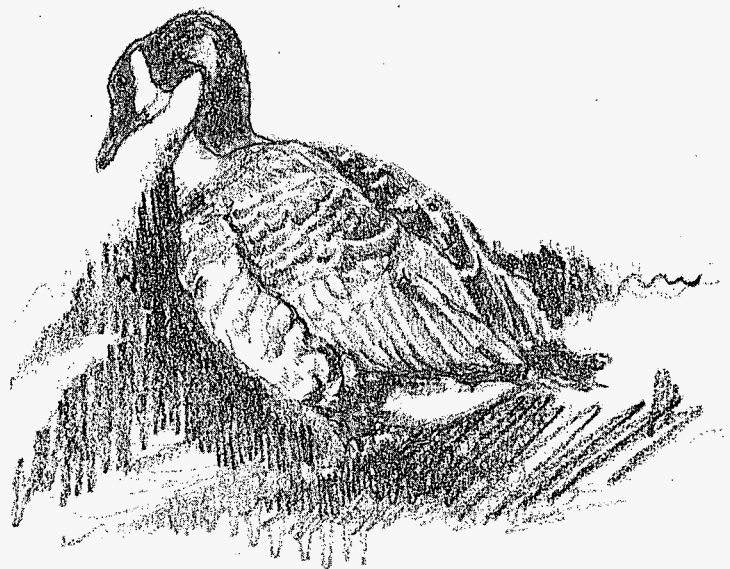
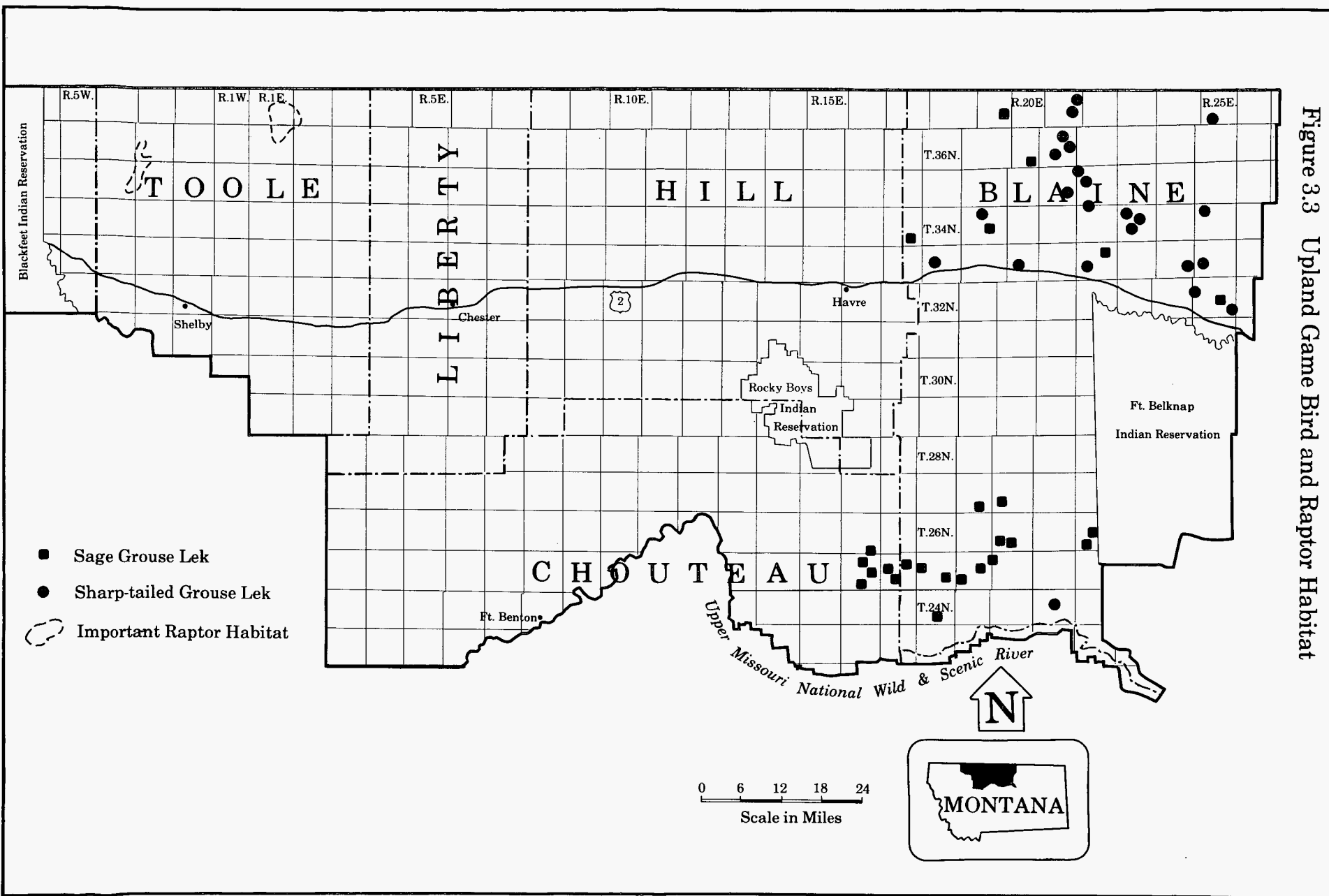


Figure 3.3 Upland Game Bird and Raptor Habitat



CULTURAL RESOURCES

Archaeological resources in the planning area consist of artifacts, features and sites representing occupation of the area by Native Americans. Approximately 1,500 archaeological sites have been recorded in the planning area. There is evidence indicating that occupation of the area began with Ice Age hunters, about 12,000 years ago, but most of the prehistoric, aboriginal remains date from the last 3,000 years. Tipi rings, stone piles, stone tools, buffalo jumps and other features related to subsistence or religious activities, are the typical remains within the planning area.

About 250 historic sites have been recorded in the planning area. Historic resources are the remains of settlement and exploitation of the area by Euro-Americans. The historic period begins with early 19th century explorers and trappers such as Lewis and Clark, who explored along the Missouri and Marias Rivers. Several fur trade forts were built along the Missouri River and steamboats operated on the river somewhat later. The planning area hosted a variety of occupations, including gold seekers, fur traders, settlers and businessmen during the 1800s.

Historically important were several Indian wars, construction of a railroad, and oil discoveries. Construction of the Great Northern Railway from Minot, North Dakota through Havre, to Great Falls and Helena in the late 1880s changed the entire character of the study area. Many new communities sprang up along the railroad line. The railroad also paved the way for the homestead boom. Most of the historic remains in the planning area originate from the homesteading period of 1910-1925.

RECREATION

General

Except for lands lying along the Upper Missouri National Wild and Scenic River, recreation in the planning area is dispersed and mostly associated with hunting and fishing. There are many other forms of recreation that also occur on public lands such as sightseeing, hiking, camping, ORV use, snowmobiling and others. Two undeveloped sites, Butch Reservoir and Reser Reservoir, have been identified for recreational purposes as well as several sites along the UMNWSR. Access has been acquired along the Marias River, specifically for recreational programs. Five general recreation management areas (RMAs) comprise this planning area. These delineate different use areas for planning purposes, budget and management. These RMAs are: the UMNWSR, Sweet Grass Hills, Marias River and its upper reaches, Nez Perce National Historic Trail, and the remainder of planning area.

The planning area contains several areas of regional or national significance. Approximately 134 miles of the 149 mile UMNWSR Corridor flow through the planning area. The river and its corridor are managed under the multiple use concept. A large portion of the planning area is traversed by the Lewis and Clark National Historic Trail and the Nez Perce Trail which is part of the National Historic Trail System.

Off-Road Vehicle

Off-road vehicle (ORV) use is dispersed and usually associated with other activities such as hunting. Please refer to Map 4 in the back of this document for the location of current ORV use designations. This includes the UMNWSR Corridor, Missouri Breaks and WSAs. Approximately 23.7% of the RMP area is currently under a limited ORV use designation. The rest of the planning area is open to ORV use.

Visual

Visual resource inventories were completed for the planning area during the Missouri Breaks and Prairie Potholes EIS projects. Visual management classes were developed based on visual characteristics of the area compared to the physiographic province in which it's located. The planning area includes two physiographic provinces, the Northern Rocky Mountains province and the Great Plains province. Management classes range from Class I in the Wild Sections of the UMNWSR to Class IV near the Canadian Border. Visual impacts should be minimized whenever possible, however Class I areas are the most restrictive in terms of meeting visual resource management class guidelines. Approximately 6% of the planning area is Class I, 12% Class II, 3% Class III and 79% Class IV (see Figure 3.4). The visual classes are defined as follows:

Class I — Allows for very limited management activities with the majority of change being tied to natural ecological happenings.

Class II — Management activities may be seen but should not attract the attention of the casual observer.

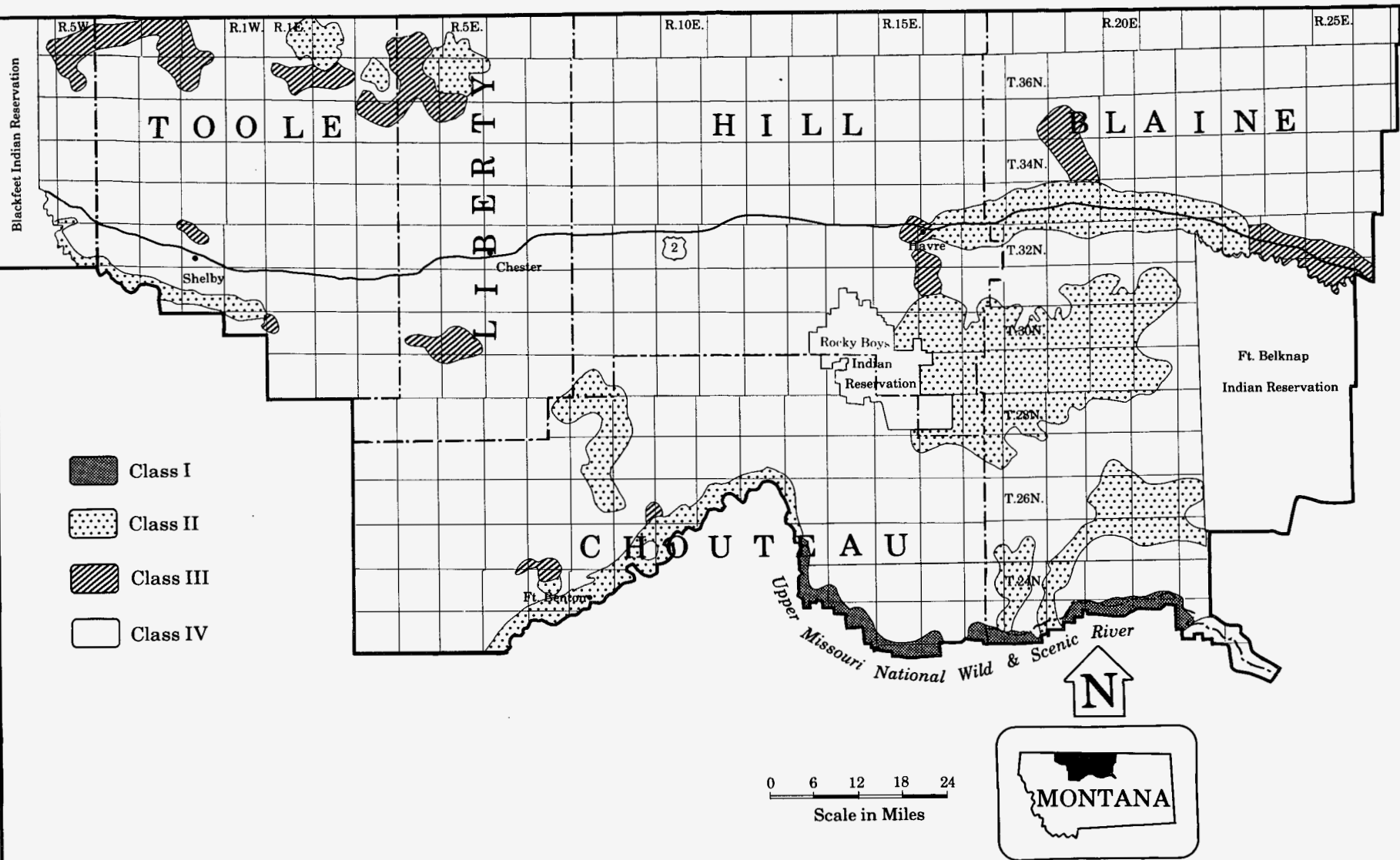
Class III — Management activities may attract attention but should not dominate the view of the casual observer.

Class IV — Management activities may dominate the view and may be the major focus of the viewer's attention.

Wilderness

There are currently no designated wilderness areas within the RMP area. Three wilderness study areas (WSAs) have been studied as a result of the Bureau's Intensive Wilderness Inventory and are now managed under BLMs Interim Guidance Policy. These WSAs are Stafford, Ervin Ridge and Cow Creek. Based on the Draft Missouri Breaks Wilderness Suitability Study/EIS (May, 1982), the Stafford and Ervin Ridge WSAs were not recommended for wilderness designation. A portion (21,590 acres) of the Cow Creek WSA was preliminarily recommended for inclusion; of which approximately 10,500 acres are within the RMP area. Each of the BLM administered WSAs is described in detail in Appendix 2.7.

Figure 3.4 Visual Resource Management Areas



LANDS

Public lands in the planning area are generally scattered. Some local concentration of BLM administered lands can be found in the Breaks region of southern Blaine County, adjacent to Fresno and Tiber Reservoirs and in the Sweet Grass Hills. A significant number of scattered land utilization (LU) lands are located in north Blaine County. These LU lands are lands which returned to federal ownership from private ownership. Most lands in this area were returned under the Bankhead Jones Act. Table 3.6 details the surface ownership by county in the planning area. Table 3.7 provides information on the subsurface acreages administered by BLM.

Rights-of-way (ROWs) are issued for various utility and transportation purposes. Table 3.8 identifies ROWs by county. Table 3.9 identifies the miles of ROWs granted across the Missouri River.

Significant amounts of public lands have been withdrawn for various purposes. Withdrawals can and often do overlap other withdrawals. Major withdrawals within the planning area have been made for purposes such as national wildlife refuges, Indian reservations, Bureau of Reclamation withdrawals and potential powersites. Table 3.10 describes the number and type and size of withdrawals by county.

Easements for access and/or protection of visual resources have been obtained for the public's benefit. Four easements totaling 3,428 acres have been obtained within the planning area.

TABLE 3.7
BLM SUBSURFACE¹

County	All Minerals	Oil-Gas	Coal	Other	Total
Blaine	640,964	18,103	105,644	7,980	772,691
Chouteau	149,231	16,057	48,547	374	214,209
Fergus	32,005	565	200	0	32,770
Glacier	2,401	3,524	0	0	5,925
Hill	51,605	22,724	50,003	7,203	125,052
Liberty	36,985	17,068	240	237	54,530
Phillips	4,468	166	0	0	4,634
Toole	75,353	40,443	1,914	493	118,203
Totals	993,012	118,650	206,548	9,804	1,328,014

Rights-of-way (ROWs) are issued for various utility and transportation purposes. Table 3.12 identifies ROWs by county.

¹BLM, 1987

TABLE 3.6
SURFACE OWNERSHIP BY COUNTY IN THE PLANNING AREA¹

County	BLM	Other Federal	Native American Lands	State	Private	Total
Blaine	455,927	3,000	520,000	177,000	1,575,867	2,731,794
Chouteau ²	81,311	48,000	34,000	268,989	2,055,175	2,487,475
Fergus ³	32,593	0	0	4,486	7,980	45,059
Glacier	1,062	392,253	1,313,563	8,269	156,330	1,871,477
Hill	14,330	34,000	78,000	153,000	1,594,000	1,873,330
Liberty	7,820	28,878	0	86,564	799,698	922,960
Phillips ³	4,603	0	0	87	224	4,913
Toole	28,452	18,321	0	199,939	1,101,304	1,348,016
Total	626,098	524,452	1,945,563	898,334	7,290,578	11,285,024

¹Montana Department of State Lands, 1984 BLM Public Lands Digest Montana, 1984.

²These figures include all the acreage on the north side of the Missouri River and those lands south of the river important for recreation management of the Upper Missouri National Wild and Scenic River.

³These figures are for the lands important for river management only.

TABLE 3.8
FEDERAL RIGHTS-OF-WAY NUMBER ISSUED/ACRES OR FEET BY COUNTY¹

ROW Type	Toole No./Size	Liberty No./Size	Glacier No./Size	Blaine No./Size	Chouteau No./Size	Hill No./Size	Fergus No./Size
Powerlines	3/11.8 mi	3/1.66 mi	1/.32 mi	3.5 mi	12 mi	6 mi	1 mi
Material Site	1/15 acres	00	00	—	2/<5 acres	—	00
Roads	5/3.46 mi	00	00	9.5 mi	—	—	00
Pipelines	5/4.6 mi	1/.72 mi	2/.68 mi	19.5 mi	6 mi	<1	2.5 mi
Telephone	1/.24 mi	1/.83 mi	00	68 mi	<1 mi	>1 mi	00
Railroad ROW	2/9.1 mi	00	00	1 mi	2 mi	<1	00
RR Station Grounds	3/28.8 acres	00	00	00	00	00	00
Communication Sites	1/0.23	25/2.3 acres	00	00	00	00	00
Reservoirs	2/112 acres	00	00	12 mi *	00	00	00
Acquired ROWs	1/.15 mi	00	00	00	00	00	00
Water Wells	00	00	00	6 mi	00	00	0

¹BLM, 1987

* 7 Ditches

TABLE 3.9
RIGHTS-OF-WAY GRANTED ACROSS UMNWSR¹

	Northern Chouteau	Blaine	Southern Chouteau	Fergus	Phillips
Powerlines	2.1 mi.	—	1.75 mi.	1 mi.	—
Gas Pipelines	—	1.10 mi.	2.5 mi.	—	—

¹BLM, 1987

TABLE 3.10
NUMBER AND SIZE OF WITHDRAWALS BY COUNTY (NO./ACRES)¹

	Chouteau	Hill	Blaine	Glacier	Toole	Liberty
Power Site	3/12,548	—	5/8,338	1/1,230	2/3,050	2/5,240
Reclamation	5/15,781	13/29,885	5/64,800	9/42,986	9/3,162	12/10,621
Wildlife Refuge	1/280	2/6,708	1/1,160	—	—	—
Native American Res./BIA	1/31,306	1/78,000	1/500,226	9/1,314,698	—	—
Coal Res	1/33,060	—	1/15,188	—	—	—
Internat'l Bndry.	—	1/308	1/376	1/57	1/310	2/174
Glacier Natl. Park	—	—	—	2/364,755	—	—
Forest Service	—	—	—	2/27,507	—	—

¹BLM, 1987

EMPHASIS AREAS

Emphasis areas are areas that may require special management to protect resource or human values.

The UMNWSR Corridor is currently the only designated emphasis area in the planning area. There are three other areas identified as possible emphasis areas. They are the Kevin Rim, Sweet Grass Hills and Cow Creek area. Each of these areas has resource and/or human values that are unique within the planning area. Only these unique values will be discussed in detail for each area. The values and/or resources that a potential emphasis area has in common with the entire planning area will not be discussed individually except for a brief overview of land uses, social and economic status, vegetation communities and livestock utilization. For a description of those common resources please refer to the appropriate section in this chapter. Figure 1.2 shows the location of these emphasis areas.

Kevin Rim

The Kevin Rim contains significant resources (exceptional raptor habitat, a major oil-gas field and significant archaeological sites) which are unique to the planning area. These resources and values form the basis for considering this area as an emphasis area. Figure 3.5 identifies the boundaries of the unique resources in the Kevin Rim area.

The Kevin Rim serves as a primary breeding and nesting area for a number of raptors including state sensitive species such as the golden eagle and ferruginous hawk. Other raptors using the rim include the prairie falcon and rough-legged hawk. The steep, south facing walls of the rim provide optimum habitat for raptor breeding and nesting and is an uncommon feature in this area of gently rolling plains. Yearlong raptor use of the rim also occurs however, a complete raptor inventory has not been made of the rim area.

The Kevin Rim also has potential high value habitat for peregrine falcons, a federally listed endangered species. No known use of the rim is presently occurring. However, peregrine falcons have used a nest site on Kevin Rim in the past. The rim has been identified as a reintroduction peregrine site.

Most raptors, including those using the rim, are quite susceptible to disturbance. This is especially crucial during the breeding and nesting period and may be a significant factor limiting maximum raptor use of the rim.

Most of the oil-gas resources within the Kevin Rim area are located in the Kevin-Sunburst field and the Amanda gas field. The discovery well for the Kevin-Sunburst field was drilled in March of 1922. By 1930, approximately 400 oil/gas wells had been drilled. By this time the margins of the field were fairly well defined (except for the west side) and it was quite obvious this area contained a large volume of oil-gas. The 1984 estimate of original oil in place was 273,240,000 barrels.

In 1984, production from the Kevin-Sunburst field was approximately 810,000 barrels of oil with cumulative production in excess of 75,000,000 barrels. Oil production is mainly from the Madison limestone and Sunburst sandstone, with minor occurrences in the Cretaceous age Kootenai and Colorado groups.

Gas occurs mainly in the Sunburst sandstone with minor production from the Madison limestone and the Blackleaf formation. The estimated gas production during 1984, was 754,000 cubic feet. Few wells have tested the potential of the Devonian strata, however it is known to have gas flows containing large amounts of carbon dioxide and some hydrogen sulfide. Recently, to the east of this region, a well was drilled to the Devonian age Nisku formation and completed as an oil well. It is highly probable that further exploration into deeper zones will prove quite productive.

Spacing regulations allow nine oil wells per 40 acres in the Kevin-Sunburst field. Gas wells are spaced so no gas wells will be closer than 2,400 feet of producing from the same formation. Presently 119 wells have been drilled in the proposed emphasis area. Approximately three wells are drilled yearly with two wells located on federal minerals.

The Amanda gas field founded in 1979, in the Swift formation established a 320 acre spacing regulation for gas wells. Approximately nine wells have been drilled on federal minerals in this field since its formation. Most of the production is from the Bow Island, Sunburst and Swift formations.

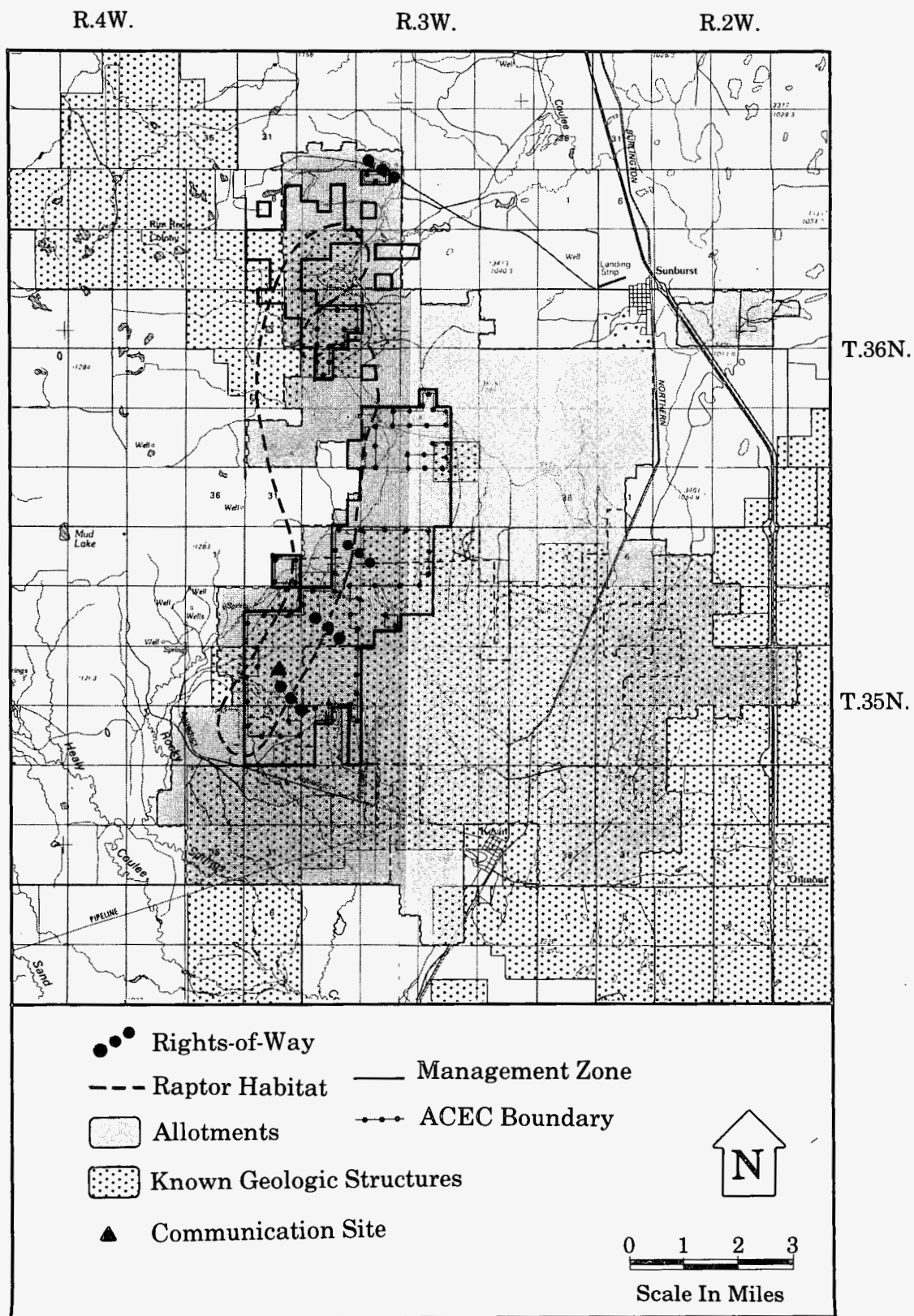
Generally, the locatable mineral potential in the Kevin Rim area is considered to be low. There are no mining claims located on these lands. However, there is a high potential for the occurrence of magnetite sand deposits inside the proposed Kevin Rim emphasis area. Occurrences of rare earths, iron and titanium are also known to be present in the region. The development potential of all these minerals is low. There is no qualitative data indicating concentrations approaching commercial grades.

Archaeological resources are significant. The Kevin Rim is a major escarpment located near numerous lakes and ponds. The area offered excellent buffalo hunting opportunities during prehistoric and early historic times. The rim was used for jumps which involved driving the buffalo over the edge to be killed by a fall of over 60 feet. The buffalo were then processed and consumed on the plains below as evidenced by hundreds of occupation sites along the base of the rim and extending outward for several miles.

Although the inventory data is incomplete, a number of buffalo jump sites are known along the edge of the Kevin Rim. At least four of the sites have pairs of rock alignments or "drive lines", leading to the edge of the rim, and two of these are known to have extensive bone beds in the deposits below. The area below the rim has better inventory data which indicates a high density of archaeological sites (approximately 1 site per 40 acres or 16 sites per section). Most of the sites consist of stone circles, or "tipi rings", and many of these are quite extensive (one site covers 160 acres and contains almost 300 tipi rings).

Many of the known sites, and those yet to be discovered, are important for their potential to provide archaeological information on prehistoric peoples who inhabited the western fringe of the Great Plains and interacted with Plateau peoples further west. Moreover, the area offers an opportunity for archaeologists to study the relationship of a variety of sites to a complex environment. The Kevin Rim area is considered a sensitive zone for cultural resources.

Figure 3.5 Kevin Rim Emphasis Area



Resource discussions of land uses, social and economic conditions, soil types, and livestock utilization specific to this area are provided below. Although not significant to the question of whether or not this area should receive emphasis management attention, these resources and land uses complement the discussion of significant resources by providing an overview of the area.

Rights-of-way within the Kevin Rim area consist of roads, pipelines, etc. associated with oil-gas activity as well as one communication site located on the rim. No easements have been obtained by BLM within the area.

Agriculture is the basic industry of the study area providing 400 jobs in the agriculture sector of the economy for Toole County. The use of BLM rangeland for livestock grazing is not significant to the agriculture industry in the area.

Oil and gas production is another basic industry of the study area providing 260 jobs within Toole County. In 1984, 12.8% of Toole County's total gas production and 46.4% of its oil production was from the Kevin-Sunburst field. This production was valued at \$25 million.

Social attitudes and perceptions are similar to the planning area as a whole and are typical of a rural area.

Soil types include loamy glacial till uplands, loamy and clayey sedimentary uplands and slow permeable fans and terraces.

Five livestock permittees run cow-calf operations, utilizing 1,775 AUMs of public forage.

Other resources and values found in Kevin Rim are common to the entire planning area and are described in the appropriate section of this chapter.

The legal description of the Kevin Rim area is given in Appendix 3.1.

Sweet Grass Hills

The Sweet Grass Hills emphasis area is unique because of its traditional religious importance to the Blackfeet, Chippewa-Cree and other Native American tribes; gold, coal, silver and copper mining history; habitat potential for reintroduction of the endangered peregrine falcon; and important elk and deer habitat. These resources form the basis for considering this area for special management. Figure 1.2 shows the location of this emphasis area. Figure 3.6 identifies the boundaries of the unique resources in this emphasis area.

The area being considered for special attention includes East, West, and Middle Buttes of the Sweet Grass Hills. Middle Butte is only being considered for Areas of Critical Environmental Concern (ACEC) designation under Alternative C. The West and Middle Buttes are located in north-eastern Toole County, and East Butte is located in northern Liberty County. There are approximately 18,719 acres within the boundaries of these three buttes. About 7,107 surface acres of the total acreage are administered by the BLM. An additional 11,072 acres of subsurface area also managed by the BLM.

The Sweet Grass Hills are important to the Blackfeet, Chippewa-Cree and Gros Ventre tribes for the practice of their traditional religious activities. There are numerous published and unpublished sources on file that document this importance. As some examples, the Sweet Grass Hills were noted as important to traditional Blackfeet religious activities in the Congressional report on the American Indian Religious Freedom Act hearings in 1978. The Gros Ventres are reported to have used Middle Butte and Porcupine Butte for vision quests in the late 1880s. Modern religious use of Mount Brown by members of the Rocky Boys Reservation is documented in the BLM files. Such use is also reported by ranchers in the Sweet Grass Hills and has been further documented in the BLM sponsored ethnographic overview of Montana. With the current resurgence of traditional religion and the religious practices which have occurred all along, Native Americans continue to seek places to exercise their ceremonial practices. A resurgence has taken place to combat social problems through improvement of self-image and is expressed in learning the traditional language, dances, ceremonies, and religious rituals. The Sweet Grass Hills offer the solitude and an undisturbed environment which are key elements for these customs and the peace and solitude appreciated by many, especially for those who practice traditional religious activities.

Religion along with the language is seen as central to the Blackfeet for keeping their culture alive. They are central elements for contact with the Blackfeet past. Principal figures in the Blackfeet religion are the bundle holders. These are the individuals in each generation who have been selected to receive and safeguard specific sets of sacred information or sacred medicine. Among the Blackfeet there are now only 12 of these people while in the past there were many more. Each holder of a sacred bundle has a group of followers and this community is the basic unit of Blackfeet religious practice. There is considerable movement between the followers of bundle holders depending on the needs of the people and the kind of spiritual guidance or medical help they need. Each bundle holder does have a particular place, a geographic locality, that is important to them, and of the 12 bundle holders presently among the Blackfeet, 4 have a special relationship to the Sweet Grass Hills. For them the area is where they must go for their sacred responsibilities, their religious activities.

There are records in the BLM files for archaeological sites on the summit of Mount Royal and on the slopes of West Butte. The sites consist of the remains of structures regarded by Plains archaeologists as vision quest structures. Additional inventory and research will undoubtedly reveal more sites.

The Sweet Grass Hills contain significant mineral deposits. West Butte is a 30 square-mile exposure of diorite porphyry and monzonite, a rock similar to granite but with very little quartz. East Butte covers an area of approximately 9 by 10 miles. The igneous rocks consist of syenite, syenitic lamprophyres, and low quartz rocks. Sedimentary rocks which have been intruded by the laccoliths in the Sweet Grass Hills show alteration by contact metamorphism in localized areas. The Madison limestone is uplifted and exposed on the north, east and south slopes of East Butte.



Mule deer use drainage bottoms, hay and alfalfa crop lands during all seasons of the year. Mule deer use of some of the higher elevation timbered areas, dominated by public lands, is highest during the summer.

White-tailed deer are common to all drainages extending from the hills. The rank deciduous-shrub vegetation lining these drainages creates excellent cover as well as forage for whitetails. The heads of some of these drainages lie mid-slope in the hills and the deer habitat can extend for over 5 miles down their length. Hay cropland can be important as feeding sites for the whitetails.

Resource discussions of land uses, social and economic conditions, soil types, and livestock utilization specific to this area are provided below. Although not significant to the question of whether or not this area should receive emphasis management attention, these resources and land uses complement the discussion of significant resources by providing an overview of the area.

One communication site exists on Mount Royal in the East Butte of the Sweet Grass Hills. Ten buildings, housing 25 users make this the area's major communication site. The Mount Royal Users Association is composed of the current users and governs the use of its members.

Six livestock operators are authorized 674 AUMs within the East and West Buttes of the Sweet Grass Hills. The use of rangeland for livestock production is important to the local economy of the area.

Hunting is prominent in the lifestyle of many area residents and is important to area residents.

Soil types include loamy and clayey soils on fans and foot-slopes of mountains and foothills; loamy and clayey soils on forested mountains; loamy and loamy skeletal soils on bedrock ridges and footslopes of mountains; and medium texture soils on terraces, footslopes and fans.

Other resources and values found in the Sweet Grass Hills are common to the entire planning area and are described in the appropriate section of this chapter.

Appendix 3.2 gives the legal description of this emphasis area.

Cow Creek

The Cow Creek area is in southeastern Blaine County. There are approximately 18,800 acres inside the unit. Although the majority of the area is public land, 4,000 acres (21%) of the creek bottom is privately owned. Three tracts of Montana state owned land, or 800 acres are scattered along the units border. The BLM is near finalizing an exchange that would acquire an additional 850 acres of the private land.

The Cow Creek area contains a portion of the Nez Perce National Historic Trail; a portion of the Lewis and Clark National Historic Trail; the Cow Island Trail; high scenic quality; and important paleontological sites. All of these resources are unique to the planning area. The Cow Creek emphasis area also overlaps portions of the UMNWSR and the Cow Creek WSA. Figure 1.2 shows the location of this emphasis area. Figure 3.7 identifies the boundaries of the unique resources in the area.

A premier portion of the Nez Perce (Nee-Me-Poo) National Historic Trail is found in the Cow Creek area (see Figure 3.7). This portion has been recognized as extremely important for several reasons. First, it runs through an area that is largely unchanged since the Nez Perce made their famous journey. It is also an area where an extensive portion of this trail has remained in federal ownership.

These outstanding characteristics were recognized in the planning documents prepared by the United States Forest Service (USFS) that set the stage for National Historic Trail designation in 1986. Those documents recommend developing a total of 464 miles of the trail with an emphasis on the recreational opportunities of foot and horse travel. Of the 464 miles, 119 miles are in the Cow Creek emphasis area; one of the few trail segments the public can enjoy almost exactly as it was in 1877.

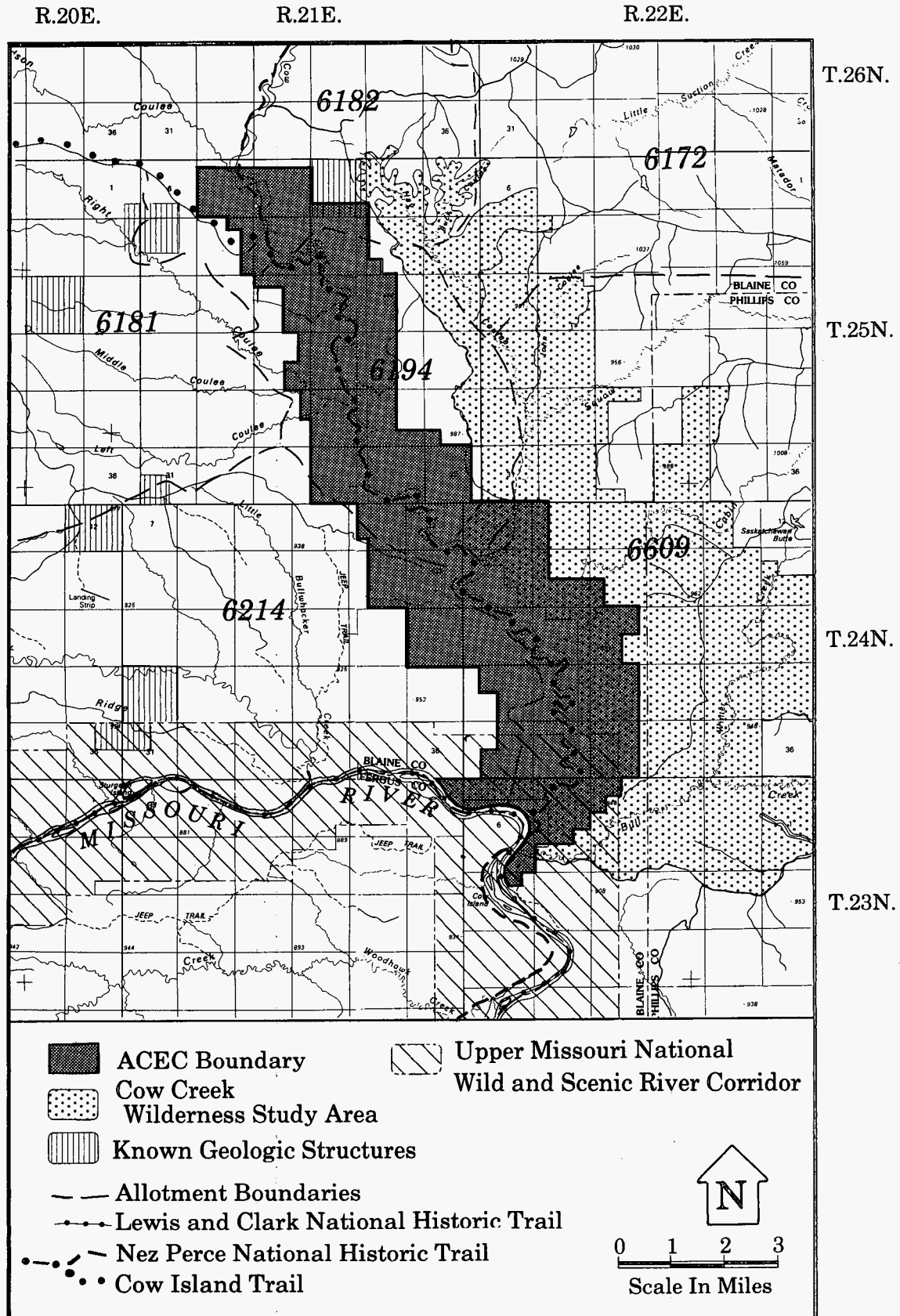
The 16 mile long corridor also includes a portion of the regionally significant Cow Island Trail. It was the main overland route for carrying persons and goods from the Cow Island Landing to Fort Benton, when the steam boats could not advance upstream. The scenery of the land is still extremely similar to that period of time. This portion of the trail is no longer used by vehicle traffic. Some abandoned out buildings still lie in the vicinity of the trail.

The Lewis and Clark National Historic Trail (the Missouri River) forms the southern boundary of the Cow Creek area.

Except along the Missouri River, the land in the Cow Creek area is rated as Visual Resource Management (VRM) Class IV with a scenic quality of "B" or good scenery. The lands within the Missouri River Corridor are rated Class I with a scenic quality of "A" or excellent scenery. The VRM inventory was done for the Missouri Breaks Grazing EIS.

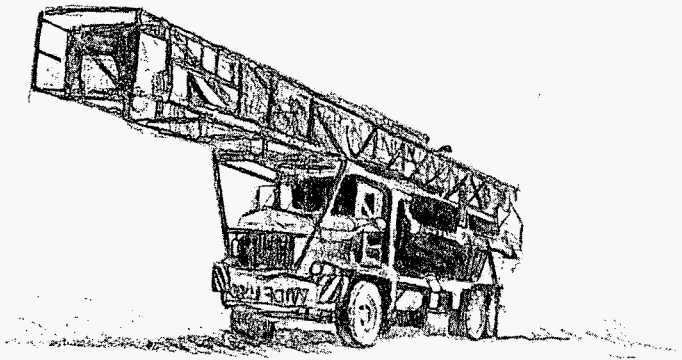
This is not an accurate portrayal of the visual qualities in this area. The entire landscape is extremely dissected with steep cliffs and rock outcroppings. Sharp contrasts between the creek bottom and overlooking ridges are evident. The topographic difference in the area can range nearly 800 vertical feet over distances less than 1 mile. The only major difference between the visual quality of the Missouri River Corridor and that of the Cow Creek area is the visual contrast of the ecosystem associated with a large river.

Figure 3.7 Cow Creek Emphasis Area



The area has significant paleontological values. Early explorations (1870s-1880s) yielded many new fossils, particularly dinosaurs. Though most were identified by incomplete skeletons, a dinosaur (*Triceratops*) was found in the Eagle Sandstone at the mouth of Cow Creek. Extensive surveys by the BLM in 1983-84 along the Missouri River between PN Landing and Kipp State Park made substantial contributions to the interpretation of geology and paleontology of this section of the Missouri Breaks.

Discussions about land uses, social and economic conditions, soil types, vegetation communities and livestock utilization specific to this area are provided below. Although not significant to the question of whether or not this area should receive special management attention, these resources and land uses complement the discussion of significant resources by providing an overview of the area.



Agricultural and oil and gas production are basic industries for the local economy in Blaine County. The Cow Creek area contains portions of five grazing allotments with, current authorized use estimated at about 1,500 BLM AUMs or 1.7% of the total AUMs licensed by the Havre RA. Livestock projects primarily include small pit/retention reservoirs, fences and wells. The use of BLM rangeland for livestock production is important to the local economy in this area.

Information on visitor use in the area is not available to estimate the expenditures associated with recreation use. The Nez Perce and Cow Island Trails currently have limited use by recreationists but this could change with the special designation and associated publicity. Camping and hunting mule deer throughout the area are important recreational activities. These activities provide expenditures to the local economy in sporting goods stores, motels, service stations and other services.

Soil types found within the area include clayey acid shale uplands, calcareous or bentonitic shale uplands, loamy sedimentary uplands and clay shale uplands with forest cover. Soils are fragile and have naturally high erosion potential.

The Cow Creek area currently provides medium to high value mule deer and sharp-tailed grouse habitat. The area also supports large populations of non-game birds, particularly in the cottonwood groves. There are signs of beaver activity along the creek bottom.

The fisheries potential for the area, based on current management, is limited by the lack of year-round water in the Cow Creek. Appendix 3.3 is a legal description of the Cow Creek Emphasis Area.

UPPER MISSOURI NATIONAL WILD AND SCENIC RIVER

The UMNWSR is situated along the southern boundary of the planning area between Fort Benton and US Highway 191. This 149 mile portion of the Missouri River flows through Chouteau, Blaine, Fergus and Phillips Counties. Included in the planning area are the river, its management corridor, and adjacent lands important to river management where bank to bank boundary limitations are in effect.

The Upper Missouri supported periods of exploration, fur trade, steamboat navigation, military activity, early settlement, development of the livestock and farming industries, homesteading, and today provides a great deal of recreation. The scenery along the river is interesting and varied; changing from a broad valley rich in riparian vegetation below Fort Benton, to the unique and beautiful "White Cliffs" below Coal Banks Landing, to the sharply carved and rugged "Badlands" below Judith Landing, to the rolling pine and juniper covered slopes of the "Breaks" below Cow Creek. These contrasting habitats also provide for a diverse and plentiful wildlife population.

Boating the Upper Missouri just for the sake of being on the water occurs, but the beauty and the solitude along the route are highly important. For the history buff, the river is an avenue into the past, providing the opportunity to visit the sites of prehistoric and historic events to try to imagine how it was. For the wildlife enthusiast, especially the bird watcher, the river is a living museum of natural history. For those interested in geology, the river has exposed a fascinating display of Cretaceous age formations, and the effects of more recent faulting and volcanic eruptions. Subsequent erosion has created a unique array of strangely beautiful land forms.

The river valley's unique beauty and abundant wildlife have been noted ever since the Lewis and Clark expedition passed through here in 1805. In our modern, urbanized, high tech society, the area's pristine scenery and opportunities for solitude and recreation in an unconfined setting are extremely important values. Much of the attention focused on the Upper Missouri result from its long and colorful history.

Formal recognition of the Upper Missouri's significant recreational values was first provided by the State of Montana in 1966, when it was designated a component of the Montana Recreational Waterway System. The importance of these values was confirmed by the river's inclusion in the National Wild and Scenic River System in 1976.

As required by Congress (P.L. 94-486), the BLM completed a management plan in 1977, which established boundaries; designated portions of the river as wild, scenic or recreational; and developed management guidelines. The boundaries were established as rim to rim (or the area seen from the river), except for the portions between Fort Benton and Coal Banks Landing and within the Charles M. Russell National Wildlife Refuge. Within these portions, a bank to bank boundary was established by Congress, although significant historic sites and necessary campsites and access points can be included. The various portions of the river were designated as outlined in Table 3.11. The river classifications and the recreation facilities are shown on Figure 3.8.

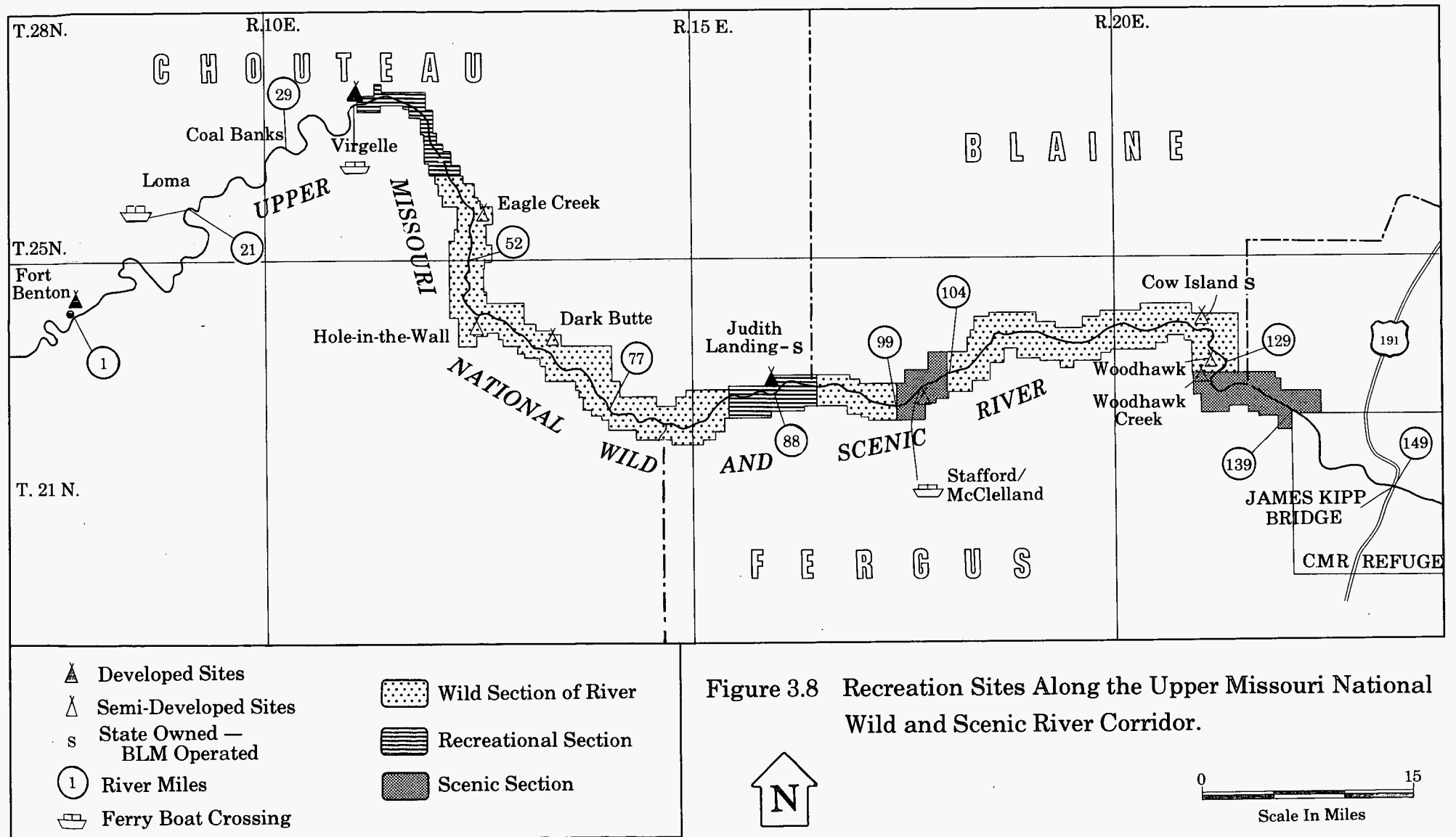


TABLE 3.11
MANAGEMENT CLASSIFICATION FOR UMNWSR¹

River Miles	Place Name	Length (Miles)	Management Classification
1 - 52	Fort Benton - Ebersole Bottom	52	Recreational
52 - 85	Ebersole Bottom - Deadman Rapids	33	Wild
85 - 92	Deadman Rapids - Holmes Rapids	7	Recreational
92 - 99	Holmes Rapids - Leslie Point	7	Wild
99 - 104	Leslie Point to Magdall Homestead	5	Scenic
104 - 128	Magdall Homestead to Cow Island	24	Wild
128 - 149	Cow Island - Fred Robinson	21	Scenic

Wild: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

¹BLM, 1987

A unique provision of the Act (P.L. 94-486) was that the Upper Missouri also be managed in accordance with the provisions of the Taylor Grazing Act (48 Stat. 1269), as amended (43 U.S.C. 315), under principles of multiple use and sustained yield as long as this management stays consistent with the provisions of this Act (P.L. 94-486) and the Wild and Scenic Rivers Act (P.L. 90-542). Management of the UMNWSR is currently guided by the *Upper Missouri Wild and Scenic River Plan*. This plan will be updated after this RMP/EIS is finalized.

In 1978, the Lewis and Clark National Historic Trail was designated. The Upper Missouri is recognized as a premier component of that system. The expedition spent the better part of 21 days along this segment of the Missouri during the outbound trek, and Captain Lewis spent an additional 4 days here during the return trip. Twelve of their outbound campsites have been carefully located (they spent more than a week at the Marias River campsite) as have three of the return campsites. Nowhere else along the route of the "Corps of Discovery" are the opportunities better for reading the journals of Lewis and Clark and experiencing the scenes that are described. The magnitude of the undertaking, the stature of the men, and the quality of their work take on new meaning in this little changed setting.

The Upper Missouri was included in the National River Recreation Study, which was supervised by the North Central Forest Experiment Station, St. Paul, Minnesota, during 1977, 1978 and 1979. A great amount of information about visitor characteristics, perceptions, activity and resource preferences, and trends in use was developed by this study. Table 3.12 illustrates the distribution of use and length of stay along various portions of the river.

The study results for the Upper Missouri showed that, in descending order of preference, the experiences sought were viewing scenery, peace and calm, learning new things, escaping crowds, and being with friends. Problems identified were too few sources of drinking water, poor quality campsites, and livestock. Evaluation of activities in which visitors wanted to participate finds seeing historical sites and visiting archaeological sites at the top of the list.

The number of archaeological sites identified along the river is now 274, and 90% of the public lands within the river corridor remain to be inventoried. These sites include tipi rings, drive lines and rock cairns along the rims and butchering, processing and camping sites across the river terraces. Sites along the rims are often fully exposed, while terrace sites are usually buried. These sites date from 10,000 years ago, and several of them have proven to be very significant. Two major archaeological sites, Holms Terrace and Lost Terrace, have been excavated, greatly adding to the data base from which to develop visitor information and interpretation. Both man and the meandering nature of the river are having serious impacts on these sites.

The number of historic sites is 102, and they relate to the fur trade, steamboat era, early settlement and homestead days. Interpretive projects have been implemented and stabilization attempted in an effort to help protect these resources for the benefit and enjoyment of present and future generations. In 1985, the BLM entered into a cooperative agreement with Montana State University for the management of cultural resources in the area. This effort has proven very helpful in the protection and interpretive efforts.

TABLE 3.12
DISTRIBUTION OF USE
BY RIVER SEGMENT (1979)

Fort Benton	Loma Ferry	Coal Banks	Judith Landing	Robinson Bridge
8%				
XXXXXXXX				
1%				
XXXXXXXXXXXXXX				
	22%			
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX				
	1%			
XXXXXXXX				
	4%			
XXXXXXXXXXXXXX				
	39%			
XXXXXXX				
	18%			
XXXXXXXXXXXXXXXXXXXX				
	2%			
XXXXXXXXXXXXXX				

LENGTH OF STAY BY RIVER SEGMENT (1979)

Trip	Number of Days									
	1	2	3	4	5	6	7	8	9	10
	Percent									
Coal Banks to Judith Landing	1	21	56	19	3	—	—	—	—	—
Coal Banks to Robinson Bridge	—	—	5	26	29	32	8	—	—	—
Fort Benton to Robinson Bridge	—	—	6	9	8	19	32	15	0	11

¹A Recreation Manager's Guide to Understanding River Use & Users, USDA, Forest Service, Gen. Tech. Report WO-38, Feb. 1984, 37 p.

Since the completion of the management plan in 1978, 3,331 acres have been added to the federal estate along the river through exchange or purchase. Scenic or scenic/access easements have been acquired on an additional 4,000 acres. This has added 18.77 miles of shoreline in fee title and 7.2 miles in easement. The success of the acquisition program has created new opportunities for protecting the visual resources and for activities like camping, hiking, fishing, etc., and it has increased responsibilities in areas like cultural resources management and visitor health and safety. Table 3.13 details the landownership classifications along the UMNWSR.

Most of the known paleontological resources in the planning area have been located along the river. BLM surveys in 1983/84 between Judith Landing and US Highway 191 identified 104 sites in the Judith River Formation. These sites varied from incomplete dinosaur skeletons, diverse invertebrates to "wash" sites consisting of small teeth, scales, vertebra and similar materials.

Visitor use of the Upper Missouri has been increasing ever since its designation (see Table 3.14), and recent monitoring efforts have demonstrated that as much or more use is occurring outside of the primary use season. Most of this additional use is occurring during the fall hunting season. A recent review of the methodology used to calculate visitor use data, especially bankside and hunting use, reveals that it may have been an ultra-conservative approach, and that actual use is much greater than that calculated, approaching 40,000 to 50,000 visitor days annually.

There is little recreational development along the river away from the launch/take out points and most camping is primitive in nature. Several pit toilets, a few of them within livestock enclosures, constitute most of the development (see Table 3.15). Boaters are usually attracted to cottonwood groves along the river for their picnic and camp sites. The groves provide shade, firewood, and an attractive setting for these activities. Livestock are also attracted to these groves next to their water source, and conflicts do occur. Many of the groves along the river are decadent, and few new groves are developing.

The Upper Missouri is an easy river to boat, and as such is attractive to a wide variety of age groups and skill levels. It is particularly popular with novice canoers. However, existing and potential hazards exist; the river contains shifting gravel bars, snags and strong undertows. Three ferry boats cross the river (see Figure 3.8), and they create a strong undertow, while their low cables are an ever-present capsizing hazard. During high water, these cables often touch the water surface and are not apparent. Around campsites, the brittle nature of cottonwood is a hazard because high winds can send large branches crashing to the ground unexpectedly. Sanitation around the campsites is a human health hazard that is directly proportional to increased use.

A visitor contact station has been established in Fort Benton for registering boaters and supplying maps, litter bags and river and tourist information. In the station, simple interpretive displays and programs on the river and its resources are provided. There is a heavy emphasis on river safety. Positive experiences and a growing relationship with the Fort Benton community indicate potential for an expanded operation in the future. Rangers are also stationed at Coal Banks and Judith Landings to provide similar services in a less formal setting, usually at the boat ramp.

TABLE 3.13
LANDOWNERSHIP CLASSIFICATION ON UMNWSR

COUNTY	TYPE	CLASSIFICATION								
		Surface Ownership	Power Site Classification	Coal Reservation Mont	Easements			Trespass	Fed. Mineral Ownership; Wild (4)	Corridor Scenic/ Recreation (5)
					S(1)	A(2)	S/A(3)			
North Chouteau (HRA)	FED	16,585.42	4,399.05	10,930.00	3,614.59	154.62	802.54	12,000	18,760.82	1,653.48
	ST	1,539.73	0	5,301.29						
	PVT	16,522.31	771.05	160.00						
Blaine (HRA)	FED	27,342.77	6,272.31					22.00	21,479.62	5,373.73
	ST	1,539.73								
	PVT	2,068.39	409.08							
South Chouteau (JRA)	FED	9,994.94	2,854.36	120.00					8,146.51	1,937.61
	ST	1,989.30		121.34						
	PVT	6,964.46	291.02							
Fergus (JRA)	FED	32,593.22	8,115.70	49.10					26,234.16	11,958.44
	ST	4,485.94								
	PVT	7,980.14	201.61							
Phillips (PRA)	FED	4,602.98	567.88							4,634.40
	ST	87.47								
	PVT	224.76	58.35							
TOTAL for UMNWSR	FED	91,119.33	22,209.30	11,099.10	3,614.59	154.62	802.54	22.00	74,621.11	25,557.66
	ST	9,642.17		5,422.63						
	PVT	33,760.06	1,731.11	160.00						

1 — Scenic easement

2 — Archaeological easement

3 — Scenic and access easement

4 — Lands in the wild sections are formally withdrawn from mineral entry.

5 — Lands within the corridor classified as scenic and recreational are a discretionary no lease area for mineral development.

6 — FED - BLM Administered

7 — ST — State

8 — PVT — Private

TABLE 3.14
VISITOR USE UPPER MISSOURI NATIONAL WILD AND SCENIC RIVER

FY	PRIMARY USE SEASON ¹						LATE SEASON/HUNTER ²				TOTALS	
	Boating			Bankside			Boating		Non-Boating			
	No. of Parties	No. of Visitors	No. of Visitor Days	No. of Visitors	No. of Visitor Days		No. of Visitors	No. of Visitor Days	No. of Visitors	No. of Visitor Days		
'75	Unavail.	1,648	6,890	Unavail.	Unavail.		Unavail.	Unavail.	Unavail.	Unavail.	1,648	6,890
'76	Unavail.	2,228	9,313	Unavail.	Unavail.		Unavail.	Unavail.	Unavail.	Unavail.	2,228	9,313
'77	Unavail.	1,293	5,402	Unavail.	Unavail.		Unavail.	Unavail.	Unavail.	Unavail.	1,293	5,402
'78	Unavail.	2,056	8,281	Unavail.	Unavail.		Unavail.	Unavail.	Unavail.	Unavail.	2,056	8,281
'79	Unavail.	2,394	9,576	Unavail.	Unavail.		Unavail.	Unavail.	Unavail.	Unavail.	2,396	9,576
'80	329	1,848	6,877	Unavail.	Unavail.		Unavail.	Unavail.	Unavail.	Unavail.	1,848	6,877
'81	332	1,859	7,487	5,535	5,783		Unavail.	Unavail.	Unavail.	Unavail.	9,153	13,270
'82	356	2,115	7,260	7,282	7,995		259	961	Unavail.	Unavail.	9,656	16,216
'83 ³	443	2,995	8,910	7,200	8,000		116	450	Unavail.	Unavail.	10,311	17,360
'84	387	2,151	7,090	7,264	8,272		697	1,981	1,080	2,700	11,192	20,043
'85	470	1,687	7,792	8,135	18,877		945	3,545	Unavail.	Unavail.	10,767	30,214
'86	499	2,382	8,589	6,622	10,483		859	1,437	567	2,127	10,430	22,636

¹ Actual Observed Numbers² Observation & Extrapolation³ Readjusted

TABLE 3.15
RECREATION FACILITIES

Facility Name	River Mile	Facilities Available	Public Land Access	Ownership
Fort Benton Visitor Center	1 N	Information, Interpretive Display	Yes	BLM
Fort Benton Boat Launch	1 N	BL	Yes	City
Evans Bend	6.5 S	DC, PT	No	BLM
Rowe Island	13.0 N	DC	No	BLM
Senieurs Reach	16.35	DC	No	BLM
Black Bluff Rapids	19.3 N	DC	Yes	BLM
Loma Ferry	21	BL	Yes	S
Wood Bottom	21.2 N		Yes	
Marias Island	22.5 N		Yes	
Spanish Islands	27.2 S	DC	No	P
Virgelle Ferry	39	BL	Yes	S
Coal Banks Landing	41.5 N	C, BL, W, PT, RS	Yes	S
Little Sandy Creek	46.7 N	DC, PT	Yes	BLM
Little Sandy Creek	47.4 N		Yes	
Lanning Ranch	51 N	L	Yes	P
White Rocks	53.1 N		Yes	
Eagle Creek	55.7 N	DC, PT	Yes	P
Hole-In-The Wall	62.8 S	C, S, PT	Yes	S
Dark Butte	69 N	DC, PT	No	BLM
Pablo Bottom	72.8 N	DC, PT	No	BLM
Stoos Ranch	75.3 N	L	Yes	P
Slaughter River	76.5 N	C, S, PT	Yes	S
Arrow Creek	77 S		Yes	P
Judith Landing	88.5 N	C, BL, PT, W, RS	Yes	S
Stafford Ferry	101.8 S	CT, W, BL	Yes	S
Gist Ranch	122.6 N		Yes	BLM
Cow Island Landing	125.5 N	DC, PT		S
Bull Creek	127 N		Yes	P
Woodhawk Bottom	130.6 S	DC, PT	Yes	BLM
	131.0 S			
Power Plant Bottom	132.3 N	L	Yes	P
Heller Bottom	136 S		Yes	P
Kendall Bottom	144 N		Yes	CMR
Knox Bottom	145.3 S		Yes	CMR
Le Clair Bottom	148.1 N		Yes	CMR
James Kipp State Park	149 S	C, PT, W, BL	Yes	S

Legend

River Mile
N — North
S — South

Facilities
BL — Boat Landing
DC — Designated Campsite
PT — Pit Toilet
C — Campground
W — Water
RS — Ranger Station
S — Adirondack Shelter
L — Private Launch Site

Ownership
BLM
S — State
P — Private
CMR—C M Russell Wildlife Refuge

SOCIAL AND ECONOMIC CONDITIONS

This section describes the aggregate character of an eight county study area; Blaine, Chouteau, Fergus, Glacier, Hill, Liberty, Phillips and Toole Counties. This study area covers the northern portion of the Great Falls RA, the entire Havre RA and the UMNWSR Corridor.

The population of the eight counties was 68,032 in 1980 (8.6% of Montana's total population). This was less than a 1% increase from 1970, however, the population decreased 11% from 1960 to 1970.

The largest community in the study area is Havre, with a 1980 population of 10,981, an increase of 4% over 1970. Other towns in the study area include Chinook (1980 pop. 1,660), Harlem (1,023), Big Sandy (835), Fort Benton (1,693), Cut Bank (3,688), Chester (963), Shelby (3,142), Malta (2,367) and Lewistown (7,104).

The urban population showed very little change between 1970 and 1980, while there was a shift in population from rural farm to rural non-farm. Part of this shift may be due to the decrease in the number of farms and ranches in the area. From 1974 to 1982, the total number of farms and ranches in the study area decreased 7.2%.

The study area is sparsely settled with 2.5 persons per square mile. With the exception of Hill County (6.2 persons/square mile), the population density of the area is well below the state average of 5.4 persons per square mile. This area is expected to see little population growth over the next 20 years.

Employment figures for 1978 and 1983, show agriculture, government, services and retail trade to be the main sources of employment in the study area (see Table 3.16). Those four sectors of the economy account for 74% of the 1983 total wage and salary employment. During 1983, 8% of the work force was employed in the agriculture sector, 26% in government, and 40% in services and retail trade. Total employment decreased from 1978 to 1983 by 5.4%. During this same period, employment in Montana increased by 1%.

The work forces in Blaine, Chouteau, Toole, Phillips and Liberty Counties are primarily employed in agriculture and government while the work forces in Glacier, Fergus and Hill Counties are primarily employed in the retail trade and service sectors. Havre, in Hill County and Lewistown in Fergus County serve as the areas retail trade and service centers while Glacier County serves the tourists from adjacent Glacier National Park. Employment is seasonal for the area with peak employment levels in July and August and low employment levels in January and February. This is typical of an agrarian based economy where jobs associated with agriculture occur for the most part during the late spring to early fall months. The percent of change in county employment from 1978 to 1983 ranged from -10.6% for Blaine County to 14.3% for Phillips County. Phillips was the only county to show an increase in employment for this time period.

Table 3.17 shows the study area's earnings by source for 1978 and 1983. In 1983, government contributed 21% of the study area's total earnings while agriculture and services contributed 17 and 16% respectively.

TABLE 3.16
EMPLOYMENT BY TYPE AND BROAD
INDUSTRIAL SOURCE IN THE STUDY
AREA: 1978-1983¹

Wage & Salary	1978	% of Total	1983	% of Total	% Change 1978-1983
Farm	1,805	7.3	1,764	7.5	- 2.3
Agr. Ser. For. Fish	149	0.6	174	0.7	16.8
Mining	958	3.9	792	3.4	-17.3
Construction	1,328	5.4	756	3.2	-43.1
Manufacturing	880	3.5	732	3.1	-16.8
Trans & Pub.					
Utilities	1,902	7.7	1,490	6.4	-21.7
Wholesale Trade	1,118	4.5	1,070	4.6	-4.3
Retail Trade	4,061	16.4	4,049	17.3	0.3
Fin., Ins. & Real Est.	698	2.8	763	3.3	9.3
Services	5,165	20.8	5,616	23.9	8.7
Government	6,344	25.6	6,005	25.6	-5.3
Total	24,794		23,456		-5.4

Note: Totals may not add due to data not shown to avoid disclosure of confidential information

¹Bureau of Economic Analysis, U. S. Department of Commerce, Regional Economic Information System.

TABLE 3.17
PERSONAL INCOME BY MAJOR COMPONENT
IN THE STUDY AREA: 1978-1983 (\$1,000)¹

Earnings by Industry	1978	% of Total	1983	% of Total
Farm	92,923	24.8	72,557	17.4
Agr. Ser., For., Fish	2,176	0.6	2,251	0.5
Mining	17,044	4.5	22,660	5.4
Construction	26,998	7.2	17,427	4.1
Manufacturing	11,731	3.1	13,188	3.2
Trans. & Pub. Utilities	40,923	10.9	49,912	11.9
Wholesale Trade	16,245	4.3	10,823	5.0
Retail Trade	37,573	10.0	44,333	10.6
Fin., Ins. & Real Est.	10,606	2.8	12,364	3.0
Services	50,876	13.6	69,172	16.6
Government	62,468	16.6	86,919	20.8
Total	375,427		417,757	

Note: Totals may not add due to data not shown to avoid disclosure of confidential information

¹Bureau of Economic Analysis, U. S. Department of Commerce, Regional Economic Information System.

Since farm earnings in the planning area vary considerably from year to year, non-farm labor income can provide a measure of change in economic activity. After adjusting for inflation, non-farm earnings peaked in 1979, and then declined in 1980 and 1981 with the recent recession. Economic activity declined significantly in 1982, with non-farm earnings decreasing 8%. This compares with a 3% decline for Montana and a 1% decline for the United States from 1981 to 1982.

A major portion of the public revenues within the planning area are supported by industries such as oil-gas and agriculture. In 1984, net proceeds from oil-gas production accounted for 41% of the total taxable valuation for the eight counties and varied from less than 1% for Fergus County to 50% for Toole County. Property tax assessment on agricultural land and equipment accounted for 31% of the total taxable valuation and varied from 74% for Chouteau County to 13% for Glacier County.

Counties receive revenues from BLM lands under the Bankhead-Jones Farm Tenant Act, Taylor Grazing Act (section 15 payments) and Payment-in Lieu of Taxes Law (PILT). The State of Montana receives revenue under the Mineral Leasing Act and Taylor Grazing Act (section 3 payments). Table 3.18 shows BLM mineral and grazing receipts by county and the distribution of those funds along with PILT payments for 1983. BLM receipts for the study area were approximately \$6.2 million in 1983, with \$0.1 million going back to the counties, \$2.3 million to the Montana State Treasurer, \$0.9 million to the U.S. Treasury, \$1.8 million to the Reclamation Fund of the Bureau of Reclamation and \$0.8 million to range betterment funds.

Regional Economy

Like the State of Montana, the study area derives its economic strength from the natural resources. These resources include land which is used for crop and livestock production, oil-gas production, and water and wildlife that offer outdoor recreation opportunities. Most of the area's employment, personal income and gross regional product are derived from the utilization of natural resources. Many of the economic sectors are directly related to some type of natural resource and several other sectors are indirectly related to natural resource production, extraction or utilization.

Agriculture, oil-gas extraction and tourism/travel comprise the industries within the planning area that have the potential to be affected by BLMs management decisions.

A brief description of these industries is given below and whenever possible, production data is given for each industry to indicate historic output levels and the relative contribution of each industry to the economic base of the region. Table 3.19 shows average production data for livestock sales and oil-gas production in the study area. In addition, production levels associated with public resources will be discussed along with a comparison to the total production in the study area. Agriculture is the basic industry of the area providing 4,900 jobs in the agriculture sector and an estimated 15,900 jobs in other sectors of the economy. Agriculture directly and indirectly accounts for 65% of the total employment in the study area (proprietors and wage/salary employment).

TABLE 3.18
BLM RECEIPTS AND THE DISTRIBUTION OF THOSE RECEIPTS FOR 1983 AND PILT¹

County	Mineral and Grazing Receipts*	Distribution					PILT
		Counties	State Treasurer	U.S. Treasury	BOR Reclamation Fund	Range Betterment Fund	
Blaine	\$1,174,100	\$101,600	\$368,800	\$189,400	\$291,000	\$223,200	206,157
Chouteau	237,800	11,600	107,300	21,500	85,900	11,600	101,074
Hill	93,000	1,300	45,200	9,000	36,200	1,300	32,765
Fergus	447,100	27,400	151,400	73,800	116,200	78,300	325,518
Phillips	3,223,200	214,500	1,124,100	494,000	883,700	507,000	130,809
Glacier	134,800	200	67,200	13,400	53,800	200	283,869
Liberty	204,900	1,000	101,500	20,300	81,200	1,000	21,891
Toole	722,500	3,500	357,700	71,500	286,200	3,500	29,978
Total	\$6,237,400	\$361,100	\$2,323,200	\$892,900	\$1,834,200	\$826,100	\$1,132,061

*Totals may not add due to rounding.

¹Public Lands Digest, 1984; and RMAS, 1984

TABLE 3.19

AVERAGE ANNUAL LIVESTOCK SALES AND OIL/GAS PRODUCTION WITHIN THE STUDY AREA (AVERAGE PRODUCTION BASED ON THE 5 YEAR PERIOD 1979-1983)¹

County	Livestock Sales (\$1,000)	Oil Production (Bbbs)	Natural Gas Production (MCF)
Blaine	18,269	280,946	11,275,030
Chouteau	14,990	4,583	1,252,689
Fergus	32,189	0	3,354
Glacier	11,303	1,496,049	2,661,474
Hill	7,793	1,893	6,820,335
Liberty	4,419	390,737	2,248,354
Phillips	21,568	662	8,487,331
Toole	5,891	1,121,342	6,252,507
Total	116,422	3,296,212	39,001,074

¹Reports of the State Department of Revenue July 1, 1978 to June 30, 1984, Montana Agricultural Statistics 1978 to 1983.

This area is a major contributor to Montana's wheat and barley production. From 1979 and 1983 the area produced 23% of Montana's wheat and 13% of the state's barley. Other agricultural products include oats, hay and cattle/calves. From 1979 to 1983, the study area's livestock sales accounted for 14% of Montana's total livestock sales and provided 1,500 jobs in the agriculture sector and 5,200 jobs in other sectors of the economy.

The BLM authorizes livestock grazing on 412 allotments with current authorized use to local ranch operators of 110,000 AUMs. BLM forage contributes an estimated \$2.1 million annually to livestock sales. Livestock sales of \$2.1 million from BLM forage generates an estimated \$7.1 million in business activity, \$2.2 million in earnings and the equivalent of 110 jobs in the economy (see Table 3.20). Most of the business activity and employment occurs in the agriculture and agricultural processing/miscellaneous manufacturing sectors of the economy along with the retail trade and service sectors.

Oil and gas production is another basic industry of the area providing 800 jobs in oil and gas sector and an estimated 2,400 jobs in other sectors of the economy. In 1984, 76% of Montana's total gas production and 12% of the oil production was from the study area. Currently, almost all of the federal mineral estate eligible for oil-gas leasing has been leased. In 1984, oil production from federal leases accounted for 23% of the area's oil production and 24% of the area's natural gas production. Oil and gas produced from federal leases is a substantial portion of the area's mineral production. The value of oil-gas produced from federal leases is estimated at \$44.8 million since 1984. It is estimated that this production generates an estimated \$72.3 million in business activity with about \$14.4 million in earnings and 770 jobs in the economy (see Table 3.20). Most of the business activity and employment occurs in the petroleum and natural gas extraction, construction and transportation sectors of the economy along with the retail trade and service sectors.



TABLE 3.20

BUSINESS ACTIVITY, EMPLOYMENT AND EARNINGS RELATED TO AND DERIVED FROM PUBLIC LAND RESOURCES IN THE STUDY AREA¹

Resource	Units	Production	Value Production	Business Activity	Employment			Total Earnings
					Direct	Indirect	Total	
Grazing	AUMs	110,000	2,067,000	7,126,000	26	86	112	2,162,000
Oil	Bbbs	837,000	26,066,000	42,076,000	115	333	448	8,357,000
Gas	MCF	8,913,000	18,717,000	30,213,000	82	240	322	6,001,000
Recreation	VUD	33,000	681,000	1,254,000	8	7	15	381,000

¹Business activity, employment and earnings were estimated using coefficients from the Montana BLM Economic/Demographic Model.

NOTE: AUM — Animal Unit Months
Bbbs — Barrels
MCF — Thousand Cubic Feet
VUD — Visitor Use Day

Evaluating the economic significance of the recreation, tourism and travel industry is difficult because data are often unavailable and this industry's employment and income earnings cut across many other industry sectors. Non-resident travel in Montana was estimated at 2.2 million visitors in 1983 with expenditures by non-resident travelers at \$423 million. This spending supported about 10,500 jobs and created \$106 million in earnings for Montana workers. BLM land in the study area provides approximately 12,000 hunter-days and recreation use within the UMNWSR Corridor is estimated at 21,000 visitor days. This includes floater plus non-floater use such as camping and picnicking. Recreationists using public lands spend an estimated \$700,000 annually. These expenditures represent direct payments to sporting goods stores, motels, service stations and other services. As recreation expenditures circulate through the economy, an estimated \$1.3 million will be generated in business activity with \$400,000 in earnings and the equivalent of 15 jobs primarily in the retail trade and service sectors (see Table 3.20).

Social Setting/Lifestyles

Indicators of social well-being considered include the number of physicians, crime rates, income, education, employment and household conveniences. These indicators present a mixed picture, suggesting the area has both the positive and negative factors associated with remote rural areas.

When comparing the study area to Montana, the area is lacking some basic services: the number of physicians per person is lower, education levels are slightly lower, the proportion of housing lacking some or all plumbing is higher, mean family income is lower and the proportion of families below the national poverty level is high. Positive factors include the area's remoteness and sparse population which result in freedom from many urban problems, such as high crime rates and overcrowding. In addition, the area's unemployment rate is lower than the state average.

The Native American population in the study area shows the same characteristics as the Native American population in the state: a lower percentage of high school graduates; significantly higher unemployment rates; and lower mean family incomes. Although Blaine County, with the Fort Belknap Indian Reservation, has the lowest unemployment rate among Native Americans, it also has the lowest mean family income in the study area. Hill County, with the Rocky Boys Indian Reservation, has the highest Native American unemployment rate.

These indicators have changed from 1970 to 1980 and show that, overall, the study area's standard of living has improved. The number of physicians per person increased slightly from 1970 to 1980, the percentage of families with

income below the poverty level has decreased and education levels are higher. At the same time per capita income increased 24% and mean family income increased 26% (adjusted for inflation). This compares with a 20% increase in per capita income and a 28% increase in mean family income for Montana during the same time period.

While the study area's income and education levels have increased, so have crime and unemployment. The 1970 unemployment rate was 3.6% compared to the 1980 rate of 5.7%. The latest estimate of the study area's unemployment shows a 7.1% rate for July 1985 (Montana Department of Labor and Industry, August 1985).

Attitudes and perceptions are based on a study completed by ABT Associates in 1980, and includes only the information collected from Blaine County, where the majority of the study area's surface acreage is located. The residents exhibit attitudes and values typical of a rural farm/ranch-oriented society in the western United States. Residents value the rural character of the area, wide open spaces, naturalness and solitude. Positive aspects of the area include the independence and industriousness of the local people, the lack of urban problems, relaxed pace and personal freedom. Residents have a strong sense of heritage. These people have grown with the area, have seen changes occur and are extremely concerned about any management decisions that would potentially disrupt their lifestyles. Perceived threats to the existing lifestyle revolve around potential energy development, water rights and the conversion of rangeland to farmland. Hunting and fishing are the primary forms of recreation. Recreational opportunities represent a necessary portion of the local lifestyle and are not perceived as a conflicting land use. The residents felt that current vegetation allocations are beneficial for both game and non-game species.

Native Americans are known to use locations in the RMP area for the practice of their religion. Areas that are sought for such purposes are generally remote and usually free of modern land uses. These characteristics are sought because the activities Native Americans wish to pursue require uninterrupted solitude, availability of specific kinds of plants or other special and scarce resources. These locations have become less and less available and therefore more important to Native Americans. The activities that express traditional cultural values include vision questing, ceremonial sweats, collection of plants for ceremonial and medicinal purposes and the collection of various minerals for paints. Usually, Native Americans do not equate the conduct of these activities with specific localities but with a more generalized setting that affords the opportunities they feel are important. The Sweet Grass Hills section of this chapter contains a discussion of Native Americans religious practices in the area.